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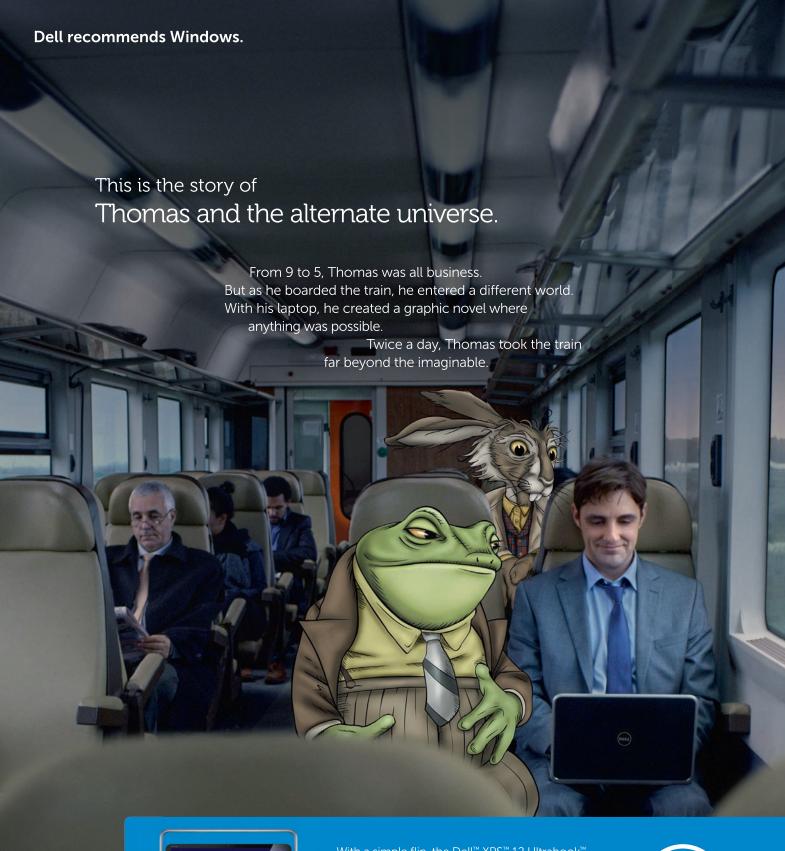
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Surface Pro offers innovation in the gaps

Microsoft's new tablet has more in common with your laptop than your iPad. And that's the point

his month we've been testing budget laptops, office PCs and internet security suites (see page 56 onwards). You couldn't get more 'PC' than that - the kind of Windows computer the average person seeks out, and the software required to protect it.

I've also been testing an Ultrabook; new BlackBerry 10, Android and Windows Phone 8 smartphones; and the Microsoft Surface Pro. These products are in a different league in terms of their bang for your buck, but not so far advanced in terms of what they do and what they are for. We all want similar things from our computers.

We've also seen both HTC and BlackBerry launch what each referred to as 'new' experiences in the smartphone space. Is the gap growing between traditional PC and modern mobile computer?

Testing the Surface Pro was an education. I expected a tablet to rival the iPad or Nexus 10. Focussed on business use like the Surface RT, but lacking true computational power with the battery life of a mobile device. I quickly realised the Surface Pro has more in common with a high-end business laptop than it does a consumption device such as the iPad.

It's a Core i5 PC with the power that entails, slightly hobbled by its smallish screen and portable keyboard, and its portability reduced by the needs of a power-hungry chip - both in terms of battery charge and heat dissipation. But it is the most portable full-spec PC ever (see page 32).

To understand the Surface Pro's importance to Microsoft you have to consider why it exists. Microsoft is a software company, reliant on Intel to provide the hardware, and OEMs such as Dell, Lenovo and HP to make the products. It's made the Surface Pro to showcase what Windows 8 can do, to push PC makers into innovation. Like Intel creating and promoting the Ultrabook, Microsoft wants OEMs to leave behind the safety of traditional desktops and cheap 15in laptops, and innovate in the spaces between the standard models with which we have grown familiar.

ARM-led mobile technology has developed at a furious pace, and the Wintel world is trying to catch up. But portability requires compromise: whether on battery life, performance, features or price, no-one has yet come up with a device that offers perfect performance wherever you are.

Surface Pro is not that device, but it does occupy a unique space between ARM tablet and Intel laptop. And it showcases Windows 8 in a way a million office PCs can't – it makes sense to use the touchscreen and stylus when you can lay down the computer or hold it in your hands.

Microsoft designed Windows 8 to be used on computers with screens ranging from 4- to 40in but, unlike Apple, it doesn't make the hardware and cannot dictate how its software is used. It's a similar scenario over at Google, where the best Android devices are Google's own 'Nexus' products.

And while Microsoft, Google and Intel have to dig deep and pay for products that show off their wares, Apple designs and makes what it thinks people will want. Whether the forthcoming iWatch is a success will depend on whether there is desire for a Smart watch. Windows 8 will be a success only if the Surface Pro spawns other products in the gaps between traditional PC, laptop and smartphone.









Regulars & offers

Welcome

Contacts

Inbox

12

News **New Products** 100 Win! Wharfedale

Diamond 10.0 speakers!

122 Cover Disc+ 126 Subscribe!

146 Next month



12 News & analysis

16 Aaron Swartz: A life cut short

In January this year, 26-year-old internet-freedom activist Aaron Swartz took his own life. The tragic news rocked the technology community. We look at who is responsible for Swartz's death, and what happens now.

18 MS-Dell loan to protect the PC

Microsoft's \$2bn loan to Dell is a sign that it wants to influence hardware designs in a post-PC world, while protecting itself from the growing influence of Linux-based OSes in mobile devices and servers.

20 Camera warfare for smartphones

This year will once again see the camera become a key feature as phone makers try to differentiate their products. We look at what BlackBerry, HTC, Nokia and Sony have in store.

21 Office on Linux

We've heard rumours about a Linux flavour of Microsoft's Office productivity suite, but is an expanded base of Office users worth sacrificing yet another reason to stick with Windows?

30 Reviews



HARDWARE

- 32 Microsoft Surface Pro
- 32 Lenovo Yoga 11
- 33 Apple iMac 27in
- 34 Lenovo IdeaPad Y580
- 34 Samsung NP540U3C
- 35 Matrox DS1
- 36 Toshiba Satellite P855-32J
- 36 MSI GeForce GTX 650 Power Edition OC
- 39 BlackBerry Z10
- 40 Musical Fidelity V-Link 192
- 40 T+A E-Series
- 41 Nikon D5200
- Orée Board

- 42 Google Play Magazines
- 43 PushBullet
- 43 Skulls of the Shogun

SOFTWARE

- 46 Microsoft Office 2013
- 48 ZoneAlarm Extreme 2013
- 48 Eset Smart Security 6
- 49 Avanquest PowerDesk Pro 8.5
- 50 MobilEdit Basic
- 50 ExifCleaner
- 50 Duplicate Finder Pro

BUSINESS

- 52 Synology DiskStation DS413
- 53 SellerDeck Business 2013
- 54 Fujitsu ScanSnap ix500
- 54 IRISNotes Executive 2

BUDGET LAPTOPS

- 58 Acer Aspire V5-517P Touch
- 58 Asus X501A
- 59 Dell Inspiron 15R-5521
- 59 Lenovo G580
- 60 Packard Bell EasyNote TE11HC
- 60 Toshiba Satellite L850D

SECURITY SUITES

- 66 F-Secure Internet Security 2013
- 66 Norton Internet Security
- 67 Trend Micro Titanium Internet Security 2013
- 68 Bitdefender Internet Security 2013
- 70 Kaspersky Internet Security 2013

OFFICE PCs

- 76 Arbico i5357 Pro
- 76 Chillblast Fusion Sapphire
- 77 CyberPower Essential 3000
- 77 Eclipse eBiz Precision i322H61
- 78 PC Specialist MPC-3470T
- 79 Quiet PC Serenity Value



56 Features & group tests

56 Budget laptops round-up

We review six laptops that cost as little as £292, yet can handle just about any computing task you might want to throw at them. These laptops offer those on a budget a great mix of performance and portability.

64 Security suites on test

In conjunction with independent testing lab AV-Test, we put the 2013 round of internet security suites through their paces and find out which offers the best protection for your PC, laptop, tablet or smartphone.

74 Best office PCs

The Windows desktop might no longer find a home in your, er, home, but we bet you're still using one in the office. We look at six machines that will fit right into a business environment, without causing the financial director to lose sleep.

82 Make the most of your Wi-Fi

Make the most out of your wireless internet connection by sharing files and resources, synching your media, controlling your entertainment, playing games and even monitoring your home. We show you how.

90 The future of tech

TVs that respond to gestures, 3D printing, and big sensors in small cameras. These are just a few of the emerging technologies you'll see on shop shelves this year. We whet your appetite for future tech.

97 PC Advisor Awards 2013 nominees

It's that time of year again, as we present our roll-call of honour for the best of the past year's technology, and our guide to the brands you can trust and the sites from which you can buy. Without further ado, we announce the PCA Awards 2013 nominees.

129 Top 5 charts: Buyer's guide



- 130 Ultraportable laptops
- 131 £501-£1,000 laptops
- 132 £1,001+ laptops
- 133 Family PCs
- 134 Media PCs
- 135 Gaming PCs
- 136 All-in-one PCs
- 139 Tablets
- 139 Smartphones
- 140 Sub-£150 printers
- 140 £151+ printers
- 141 Blu-ray drives
- 141 Wireless routers
- 142 USB drives
- 142 NAS drives
- 143 Projectors

- 143 Compact system cameras
- 144 Sub-£150 graphics cards
- 144 Sub-£150 graphics cards
- 145 Sub-£200 flat-panel displays
- 145 £201+ flat-panel displays

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See page 126

101 How to



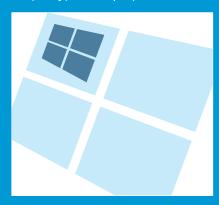
Get help with computer problems and learn how to improve your PC setup.

102 Troubleshooter

Convert your videos and enable seamless playback on all your devices.

104 Helproom

PC Advisor's team of experts solves the computing problems you pose.



110 How to: Virtualisation

Rather than dual-booting two OSes, we show you how to run one inside a virtual machine.

114 How to: LogMeIn join.me

Save yourself a journey and troubleshoot your friends' computer problems from afar.

116 How to: Google Drive

We show you how to store your photos in the cloud for free using Google Drive.



118 How to: Quickoffice Pro HD

Create and edit documents on your iPad wherever you are with Quickoffice Pro HD.

120 How to: iDevices for kids

Kid-proof your iPad or iPhone to prevent them unintentionally embarking on an iTunes spending spree.

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Reader comments











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letters@pcadvisor.co.uk

Don't tell everyone!

In the March issue (page 96) you spelled out the importance of keeping up our security defences, reminding us that we face a constant threat of identity theft. True - so why don't you follow your own advice? It would be helpful if you didn't print my name and address on the plastic packaging. I can't blank this out with a felt-tip pen, and it certainly won't shred! If you were to print my details on a separate paper insert inside the packet it could easily be removed and shredded. **David Clowes**

Android dock

There are hundreds of docks for the iPhone, but I can find just two for a Samsung Galaxy S III (and these aren't much cop). If Samsung has indeed sold 100 million S-series handsets worldwide, isn't it about time we were treated like the Apple customer? Russell Ellis

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Out-of-body computing

The computers of the future will have the power to change lives. Last issue, we ran a feature that looked at the sorts of technology that will allow a young adult paraplegic to take several steps and kick a football at the opening ceremony of the 2014 World Cup (see tinyurl.com/akdyrbp). But not all of you are agreed on what the future will hold.

"The mouse, keyboard and gamepad are ergonomic computing tools for humans, whereas touchscreens are for media and reading tasks. Could you use your voice to type in a busy office? No, because of confidentiality, voice fatigue and the possibility of annoying others. Could you use motion control on an everyday basis? No. You can't jump in front of a TV for extended periods, plus its applications are limited. Bring motion control to the PC and what happens when you scratch your head?" commented khaled mourad.

Far from worrying about annoying others, though, we think *Chi Am* secretly enjoys it: "With the most advanced laptop on a coffee table in a café, no-one even blinks at you. But with my IBM Model M connected to my IBM Thinkpad T60p (all components maxed



out), I have everyone's attention. They all stare with curiosity - whether for good or bad is another matter."

Social outcast

A recent Pew Internet Project survey found that social media is becoming less important to some users (tinyurl.com/bbreLbc). "Social networks are increasingly useful only to the narcissistic and vain, who feel the need to broadcast every part of their mundane existence to anyone who will listen," said Bobbybiscuit10. "The problem is ordinary people generally aren't interesting. I, for one, look forward to the day when Facebook, Twitter and their ilk die a deserved death."

Flagged: Star letter

Don't trust that cloud

I've just read Matt's column regarding cloud computing (April issue, page 3). It intrigues me that what so many people are now calling cloud computing is really just cloud storage, which has been around for a long time. To me, cloud computing would be an underpowered Chromebook utilising the power of some remote monster computer to play a heavy-duty game or render some form of graphics in seconds, when the task would otherwise take a week to process.

I'm not happy to trust a storage company to take care of my data. In entrusting your valuable data to such a service you are

no doubt agreeing that it will not be held responsible should that data go missing.

Neither would I be happy to work entirely online. Imagine what would happen if the service went down and you had no access to vour data, or you lost your web connection. Worse still: the service is hacked and your private data is spread all over the internet.

You might not be able to complete the purchase of your home, nor catch a flight; you might lose a valuable contract at work.

Cloud computing is pure madness. I will continue to hold myself responsible for my own data. Anthony R Ciantar

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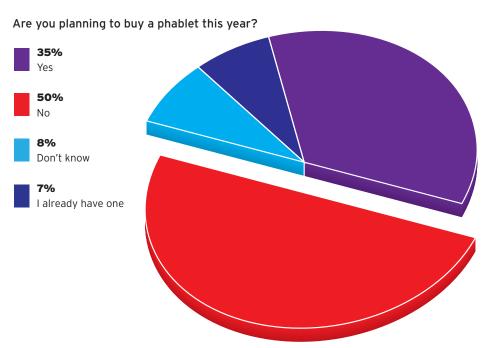
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See page 126

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World's number-one

You say on your Facebook page that you are the 'World's number-one technology magazine website for a UK audience'. It sounds a bit like that old joke about the Miss World competition always being won by someone from earth. It gave me a smile anyway. Dave James

We reply: Well, if they make tech magazine websites in Mars or Venus, they're not yet available for a UK audience Seriously, these are the words of the Nielsen Online, and not so odd when you consider that the internet is a global resource and UK users aren't forced to browse only UK sites.

5.000 fans!

It's typical isn't it. We're three people away from reaching 5,000 fans but, as soon as we dare to say as much, someone goes and deletes us. Who are you? We'll hunt you down! (Only joking... that's not possible.) Thank you *Andy James* for taking pity and helping us to spread the word, enabling us to reach and go well beyond that important milestone. *Hamza Zoubi*, incidentally, is *PC Advisor* fan #5,000.

Twitter hacked

Twitter recently admitted that 250,000 of its user accounts had been hacked, but said it had already informed those affected.

Regardless of whether your account was hacked, it never hurts to update your password. Indeed, Jillian Lee Adamson made absolutely sure her account was safe.

"It sent out an email letting people know and, believe me, I made doubly sure it was from Twitter. Even then, I had the site send me a password-reset code. You know, just to be safe," she wrote.

Ditch the licence

We were intrigued to find out whether the rise in popularity of catch-up TV, rental services such as LoveFilm and online video had affected how many of you were still paying for a TV Licence. "I haven't used a TV for five years," said *Carlo Brown*, "I do everything online."

Mike Cartright has also ditched his TV Licence. "I haven't had a TV licence for three years now, all thanks to BBC iPlayer. Live TV is essential only if you watch a lot of sport, otherwise I can wait for it to appear a little later on iPlayer," he wrote.

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Phablet craze

This year we can expect to see a range of 5in full-HD smartphones, as mobile device manufacturers continue to blur the line between phone and tablet. But how big is too big, and would you buy a phablet (that's a device with a 5- to 6.5in screen)? You can see the results of our poll (left) or join the discussion at tinyurl.com/ae9se2u.

Quickbeam They're far too big to fit in my pocket, which makes them not as phab as they're made out to be.

WhiteTruckMan Remember the good old days when mobile phones were always getting smaller?

Forum Editor It seems to me that these devices fall into a gap in the woodwork – a phone that is too big, and a tablet that is too small.

Flak999 A phablet is a jack of all trades, and master of none.

Aitchbee Once again, yet another product that is aimed at the kids' market (little people with little fingers and good eyesight). 'Hobbit device' would be a smarter name.

powerbraker I find the Galaxy Note II just the right size: I have big hands, and it fits into a jacket pocket. Going back to the comparatively tiny screen of an iPhone 3 for a few weeks was like going back 10 years in technology.

alan14 Most men keep their phones in their trouser pocket. Unless the phone companies force a trend of MC Hammer-style baggy trousers, I can't see how these large-screen phones will ever be popular.

mordwydd I find a phone screen too small – the Galaxy Note is a logical progression from the Psion. ⊠





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At the end of January BlackBerry unveiled its highly anticipated mobile operating system BlackBerry 10. With BlackBerry 10 the company hopes to take on iOS, Android and Windows Phone 8. It has a whole new set of apps and media-purchasing outlets, and will be the OS run by all forthcoming BlackBerry phones.

No longer known as Research in Motion (RIM), BlackBerry has confirmed it will take on rival smartphone manufacturers purely with its BlackBerry 10 OS, and not dip its toes into Android or Windows Phone. For a company with falling market share and dwindling popularity this is a risk, but a necessary one. BlackBerry 10 is widely regarded in the industry as the firm's make-or-break strategy.

"Today represents a new day in the history of BlackBerry," said Thorsten Heins, CEO of BlackBerry. "Two years ago, we had to make a very serious decision: adopt somebody else's platform or build a new one. We made the tough call to go it alone."

BlackBerry enlisted the help of singersongwriter Alicia Keys, who is now the firm's global creative director, to launch BlackBerry 10. Keys will "work closely with app developers, content creators, retailers, carriers and the entertainment community to shape and enhance the

BlackBerry 10 platform, and inspire creative use through its remarkable capabilities and functionality", said the company.

New features

BlackBerry 10 is based around a function known as BlackBerry Flow. This is a descriptive term for the OS' multitasking support - you can perform all functions from a single interface, with apps running seamlessly in the background.

Key to this is the BlackBerry Hub a centralised messaging centre that brings together email, instant messages and social-media updates. You can access the Hub using a single swiping gesture, wherever you are in the OS. It's a similar concept to Windows 8's Share charm.

BlackBerry has also announced an upgrade to its popular BBM IM client, which now includes video. Unlike iOS' similar FaceTime feature, BBM Video allows you to share your screen while chatting.

Finally, there's BlackBerry Balance, which offers separate partitions for work and home. Balance aims to address the problem of some users having to carry two handsets. Your business' IT department can lock down and control the work partition if necessary. A virtual firewall between the two partitions allows you to treat your work

phone as your media player, conscience clear, with no risk of losing business data.

BlackBerry said there are 70,000 apps in the new BlackBerry World app and media store, and that all major movie and music labels will be supporting the platform. Major apps are either there or coming soon, including Skype, Kindle and Angry Birds.

Z10, Q10 prepare for battle

The firm has announced two handsets running BlackBerry 10: the Z10 and Q10 (page 25). The Z10, which went onsale immediately after the launch, is operated entirely through its touchscreen. Meanwhile, the Q10, which will go onsale within the next few months, has a Qwerty keyboard that should appeal to long-term BlackBerry fans.

The firm described the smartphones as "elegant and distinctive, and the fastest, most advanced BlackBerry smartphones yet".

Both handsets are equipped with a 1.5GHz dual-core processor, 2GB of RAM and 16GB of internal storage. They support 4G LTE mobile networks and near-field communication (NFC), and each sports a Micro-HDMI port.

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APPLE LAUNCHES 128GB IPAD RUNNING IOS 6.1

Doubles iPad's storage capacity • iOS update adds functionality • 25 billion iTunes song downloads

Apple had a busy few days at the end of January, launching both a new product and a software platform, and celebrating a milestone achievement with 25 billion iTunes song downloads.

On 28 January the company launched iOS 6.1, the latest version of its mobile OS for the iPhone, iPad and iPod touch.

Philip Schiller, Apple's senior vice president of worldwide marketing, said: "iOS 6 is the world's most advanced mobile operating system. With nearly 300 million iPhone, iPad and iPod touch devices on iOS 6 in just five months, it may be the most popular new version of an OS in history."

Although iOS 6.1 is a minor update, Apple has added 4G LTE capabilities to 36 iPhone- and 23 iPad

Siri, Apple's voice-assistant, has also had an update. US users can now use Siri to purchase movie tickets (via Fandango), while subscribers to iTunes Match can download tracks from iCloud.

On 29 January Apple also announced a new version of its fourth-generation iPad with 128GB of storage. Previous storage options maxed out at 64GB.

in Denmark, Italy, Finland and Switzerland

will for the first time be able to access 4G

networks on their iPhone or iPad.

"With twice the storage capacity and an unparalleled selection of more than 300,000 native iPad apps. enterprises, educators and artists

> have even more reason to use iPad for all their business and personal needs," said Schiller.

The 128GB iPad went onsale on 5 February. The Wi-Fi version costs £639, and a model with 3G/4G connectivity is available for £739. As with other models, the 128GB iPad 4 is available in black or white. It has the same 9.7in display, design, A6X processor and FaceTime HD camera.



Nokia rolls out Windows Phone 7.8 to its Lumia smartphones

Lumia 510, 610, 710, 800 and 900 get Windows Phone 7.8

Nokia began rolling out the Windows Phone 7.8 update to its 2012 Lumia smartphone line-up in February.

Following months of delays, Nokia has brought Windows Phone 7.8 to the Lumia 510, 610, 710, 800 and 900 handsets. Those users running unlocked handsets were first in line to receive the update, while those with smartphones locked to a mobile network must first wait for their operator to approve the update.

Windows Phone 7.8 has been a long time coming for adopters of the platform. It was supposed to arrive shortly after the launch of Windows Phone 8, which took place in October last year.

Windows Phone 7.8 offers a more customisable Start Screen with resizeable live tiles and a new lock screen. Nokia said its handsets will also get Internet sharing, Bluetooth sharing and Camera Extras. New apps include Contact Share, Play To and Nokia City.

Nokia said: "You can transform your Nokia Lumia with a host of exciting new personalisation features, such as the ability to resize your tiles, new lock screen options, and more theme colours."

The update will not be supplied over-the-air (OTA), so users will instead have to plug in their Lumia device to a computer and use the Zune software to download and install Windows Phone 7.8.

Users are encouraged to make sure notifications are switched on so they don't miss the update. This is possible by enabling 'Notify me when new updates are found' in the Settings, Phone update menu.





Virgin Media ends free tube Wi-Fi

Virgin Media has stopped providing free internet access on the London Underground. However, the service remains free for its own customers, plus subscribers to Vodafone and EE. Other users can access the Wi-Fi at more than 100 stations from £2 per day. A total of 120 stations will be web-connected by the end of March.

MORE: tinyurl.com/c4nmxo6

Phones 4U to launch 4G network

Phones 4U has announced that it will launch a virtual 3G network on EE's infrastructure, with 4G LTE support to come later in the year. The service, called LIFE Mobile, will launch in March and offer a wide range of tariffs and services that include data packages as standard. MORE: tinyurl.com/cr3pufb



Eutelsat satellite broadband £20pm

Broadband delivered via satellite is becoming affordable, with Eutelsat announcing new packages that start at just £19 per month. The Tooway S package provides up to 2Mbps download speeds and 2GB of data per month. MORE: tinyurl.com/cpv5e5v

BT LAUNCHES 'TOTALLY UNLIMITED' BROADBAND

Broadband provider scraps its traffic-shaping policy and usage limits

BT has scrapped traffic-shaping and usage limits for its entry-level broadband packages, including Infinity. BT customers can now go 'Totally Unlimited' from £16 per month, with the first six months free.

BT Infinity now starts at £23 per month, promising speeds of up to 38 megabits per second (Mbps); for an extra £3 there's 76Mbps Infinity.

John Petter, managing director of BT's consumer division, said: "We have boosted our broadband offering by moving our best broadband deals to totally unlimited. Customers told us they wanted to be able to enjoy catch-up TV, streamed films and other bandwidth-eating applications without having to worry about going over their limit or being slowed down by their ISP."

The firm also announced its online storage service BT Cloud, which will be free for all broadband customers. Infinity 76Mbps and top-tier copper customers will get a large 50GB allowance. BT Cloud can be used to back up files, photos, music and films online.



As well as PCs and laptops, BT Cloud will be accessible from smartphones and tablets.

BT said existing customers wishing to get rid of their internet shackles can do so by signing a new contract. "We're extremely confident that our network can stand up to the extra bandwidth demands from totally unlimited products everywhere across the UK," said Petter.

THREE TO OFFER FREE 4G LTE BROADBAND

Three has announced that its customers can upgrade to 4G LTE for free when it launches.

The mobile operator has said its customers won't be faced with a premium fee to upgrade to 4G LTE mobile broadband when it becomes available on its network. In fact, 4G support will become a standard feature on all the company's price plans.

Dave Dyson, CEO of Three, said: "As we add the next wave of technology to our ultra-fast network, we've listened to our customers and thought long and hard about how to do it.

"We don't want to limit ultra-fast services to a select few based on a premium price, and we've decided our customers will get this service as standard."

The firm said its network will reach 80 percent of the population by the end of March, and 4G will arrive in the second half of this year. Three will use the 1,800MHz spectrum acquired in a deal with EE.

Customers will need a 4G-capable smartphone or tablet to take advantage of the faster speeds (roughly five to seven times faster than 3G).

Plusnet is 'Best Broadband Provider 2013'

Also picks up Best Budget Broadband Provider at Broadband Genie awards



ISP Plusnet scooped the 'Best Broadband Provider 2013' award in Broadband Genie's annual UK Home Broadband Survey.

The Yorkshire-based ISP came out on top with winning scores in reliability, service, technical support, speed and low-cost offerings. Mobile operator O2 was the runner-up in the poll of thousands of broadband users.

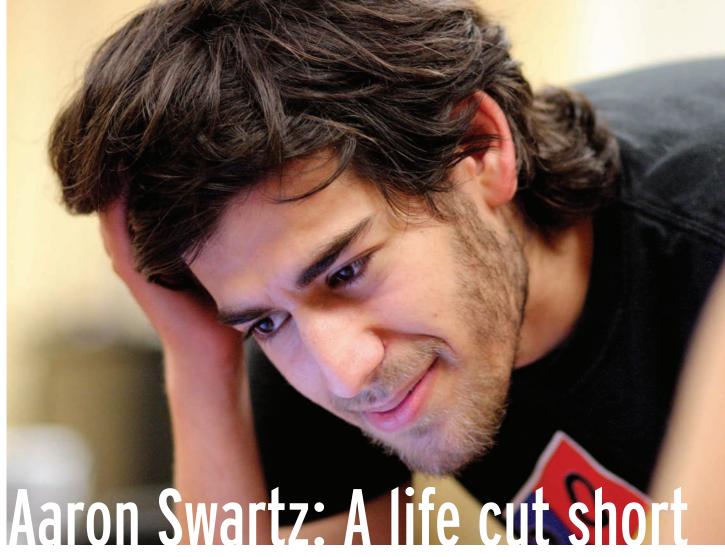
Jamie Ford, CEO of Plusnet, said: "We're delighted to get the highest scores across all these categories. It is testament to the work we have done - all this and we're still offering some of the most competitive prices on the market."

Plusnet also managed to scoop the award for 'Best Budget Broadband 2013' (runner-up: TalkTalk). The ISP offers broadband from as little as £2.99 per month.

Virgin Media won the award for 'Fastest Broadband Provider 2013'; Sky took 'Best Bundled Broadband 2013'; and Hyperoptic was crowned 'Most Innovative Provider 2013' for its gigabit network. ⊠







Following the tragic suicide of Aaron Swartz, Martyn Casserly asks who's to blame, and what happens now

n 11 January 2013 programmer and internet-freedom activist Aaron Swartz was found dead in his New York apartment having taken his own life. He was 26 years old. The tragic news shocked the technology community and resulted in emotional outpourings of sorrow and anger from friends and colleagues. Perhaps the most profound appeared on Twitter from Sir Tim Berners-Lee, who wrote: "Aaron dead. World wanderers, we have lost a wise elder. Hackers for right, we are one down. Parents all, we have lost a child. Let us weep."

Someone to blame

Swartz was known to suffer from depression, but there are many - including his family - who feel that some blame for his sad demise may lie with the US attorney's office.

At the time of his death, Swartz was facing charges for multiple felonies related to his downloading of academic papers from JSTOR, a digital repository of journals and articles, via a laptop hidden in a cupboard on the Massachusetts Institute of Technology (MIT) campus. Swartz's supporters have suggested that the case against him was unnecessarily harsh, and was possibly linked to his public position of campaigner for copyright reforms and internet freedom.

Whatever the motivations behind the case, this was a 26-year-old man, with no previous convictions and an outstanding reputation in the academic community, who believed he might face many years in prison and a fine of up to a million dollars.

The US attorney's office insists that Swartz would never have served more than six months in a low-security jail. However, in an official statement released in the aftermath of Swartz's loss, his family stated: "Aaron's death is not simply a personal tragedy. It is the product of a criminal justice system rife with intimidation and prosecutorial overreach.

"Decisions made by officials in the Massachusetts US Attorney's office and at MIT contributed to his death. The US Attorney's office pursued an exceptionally harsh array of charges, carrying potentially over 30 years in prison, to punish an alleged crime that had no victims. Meanwhile, unlike JSTOR, MIT refused to stand up for Aaron and its own community's most cherished principles."

Who was Aaron Swartz?

Swartz had been a passionate innovator in the field of sharing information online. He was a central part of the team that wrote the RSS code that now enables news feeds, blogs and podcasts to be

automatically delivered. He was a pivotal figure in the writing of the Creative Commons licence, which allows creators to distribute and have others redistribute their works while still maintaining an agreed level of ownership. He also worked on the Internet Archive, whose goal it is to offer 'universal access to knowledge' for all, and was a cofounder of user-generated news site Reddit.

He came to public prominence as an outspoken opponent to potentially restrictive legislation, such as the Stop Online Piracy Act (SOPA), which sought to impose strict copyright controls on the internet. Swartz said of the act: "This bill would be a huge, potentially permanent, loss. If we lost the ability to communicate with each other over the internet it would be a change to the Bill of Rights, the freedoms guaranteed in our constitution. The freedoms our country had been built on would be suddenly deleted."

Along with other activists Swartz formed the advocacy group Demand Progress, which petitioned congress and raised public awareness of the potential dangers with SOPA. Eventually, with the help of significant companies such as Google and Wikipedia, the act was defeated. But Swartz had made some powerful enemies.

The wrong side of the law

The JSTOR incident wasn't the first time Swartz had come into contact with the US government's justice department. In 2008 the PACER database of US Federal Court documents, to which access was usually charged at eight cents per page, was trialled as a free service in a handful of US libraries. Carl Malamud, head of the non-profit group Public.resource.org, urged activists to download and make publicly available as many of these non-copyrighted records as possible.

Swartz loaded a small Perl script on to a computer in one of the libraries, which managed to obtain nearly 20 percent (around 20 million pages) of the available records before the government shut down the trial. Swartz subsequently found himself under FBI





investigation, but the case against him was eventually dropped since he hadn't broken any laws.

The JSTOR case, though, was more complicated. Swartz was a research fellow at Harvard, which gave him a JSTOR account, and as an academic he was also allowed on to the MIT campus as a visitor, with access to the JSTOR servers.

His decision to write a similar program to the one he used with PACER, and to hide on campus a laptop to which he downloaded a considerable amount of data, was a misjudged one. Swartz was arrested and charged with numerous felonies; if convicted, these would have had drastic implications on his future. The overly serious nature of the charges highlight how US laws are struggling to keep pace with changes in technology.

Under current legislation you can be charged with a felony if you are deemed to have broken the terms and services agreement of any website or online service that you use. This is clearly open to a certain amount of interpretation, else anyone who had ever used a false name on their Facebook account would be spending a few years in jail, which is why Swartz's friends and supporters feel an injustice was acted out by the prosecutors.

JSTOR decided not to press charges against Swartz, although they did comment that his behaviour was a "significant misuse" of their service. It's notable that a couple of days before Swartz's suicide, JSTOR made available its records to anyone who signed up to a free account.

The US attorney's office did pursue Swartz, with lead prosecutor Carmen Ortiz famously stating that "Stealing is stealing". But in a statement released after Swartz's death, Ortiz maintained: "At no time did this office ever seek - nor tell Mr Swartz's attorneys that it intended to seek - maximum penalties under the law." She asserted that the penalty should have been six months in a low-security jail.

Aaron Swartz's death, and the circumstances surrounding it, have triggered investigations at MIT, online petitions to have Ortiz removed from office, and moves by Congress for the current legislation to be changed - under the working title 'Aaron's Law'.



Microsoft-Dell loan to protect the Windows PC

Microsoft wants to have more say in hardware designs in the post-PC world, and a \$2bn loan to Dell offers it a major influence. Agam Shah reports

icrosoft's \$2bn loan to Dell is a sign that the software maker wants to influence hardware designs in a post-PC world, while protecting itself from the growing influence of Linux-based operating systems in mobile devices and servers, according to analysts.

Michael Dell and equity firm Silver Lake in February announced a buyout of computer maker Dell in a deal valued at about \$24.4bn. Michael Dell will continue as CEO of the company, which he founded in 1984. The transaction includes the loan from Microsoft, which Dell views as a commitment to the "long-term success of the entire PC ecosystem".

The leveraged buyout is mainly being financed by cash and equity contributed by Dell, cash from investors affiliated with Silver Lake, and cash from MSD Capital. In addition to Microsoft's loan, debt financing has been committed by the Bank of America, Merrill Lynch, Barclays, Credit Suisse and RBC Capital Markets.

Why is Microsoft involved?

As the world's third-largest PC maker, Dell is important to the success of Microsoft's server and PC software. Even though Microsoft's loan does not represent a big part of the total value of the transaction, the software maker doesn't throw around its money lightly. Some analysts suspect Microsoft's participation in the deal might be an attempt to influence hardware designs in the post-PC world of touchscreen laptops, tablets and smartphones.

Microsoft's involvement may also be an attempt to secure the partnership and to stop the PC maker from looking toward alternative operating systems such as Linux. Dell offers Linux servers, and in late November introduced a thin-and-light XPS 13 laptop with a Linux-based Ubuntu OS. Major PC makers in recent months have also introduced laptops running Chrome OS.

"It's a simple symbiotic relationship. Dell is a platform for Microsoft products. Thus, helping Dell helps Microsoft maintain an important customer," said Anthony Sabino, a professor at St. John's University's Peter J Tobin College of Business.

The investment could help Microsoft ensure that Dell doesn't drift toward Linux-based OSes such as Chromebook or Android, said Al Hilwa, program director at IDC. "For Microsoft it's a little investment, but it allows it to put strategic influence" behind the device designs and software implementations, he said.

Windows 8, which shipped in October, has so far failed to lift PC shipments. These fell by 6.4 percent in fourth quarter of 2012 compared to the same quarter in 2011, according to research by IDC. Dell's PC shipments fell by 20.8 percent during the same quarter. IDC blames this slump on the fact few touchscreen PCs were available in the fourth quarter, and that PC makers failed to effectively communicate the benefits of Windows 8.

Dell's PC offerings are mainly based on Windows, but the company has been adding





Linux to its server offerings. The company has also been increasing its profile in the open-source community with contributions to the OpenStack cloud OS and efforts such as Crowbar.



The loan is a commitment to the long-term success of the entire PC ecosystem



With the loan, Microsoft and Dell can build an even tighter alliance around data-centre transformation, said Matt Eastwood, group vice president and general manager of IDC's Enterprise Platform Group.

"This includes converged infrastructures, which power the virtual data centre where systems management are critically important, but also integrated systems targeting specific workloads, such as data

warehousing, analytics and collaboration. These are systems that increasingly require deep joint engineering effort," he said.

The goal may be to jointly develop high-performing infrastructure that is easy to deploy and manage, but which also delivers faster revenue. There is more focus on applications in such implementations, Eastwood said.

Analysts said privatisation will provide Dell more time to build up a cohesive enterprise product stack, while freeing the company from the pressure of delivering quarterly profits and answering investors. Dell for years has been trying to transition from a commodity PC supplier into an enterprise IT vendor. It will continue to develop PCs, however, which may assist it in selling more enterprise products.

While Microsoft's loan isn't a major part of the deal, it is large enough to ensure Dell's commitment to Microsoft's products and keep its struggling PC business alive, said Charles King, principal analyst at Pund-IT.

There could also be more touchscreen laptops, tablets and even smartphones based on Windows OSes in the future, King said.

However, a Microsoft-imposed limit on Linux-based product development would not necessarily be in Dell's best interests. The firm will likely remain committed to Linux, which is important to its enterprise offerings.

"I hope for both Dell's and Microsoft's case that the investment was made without strings attached," King said.

Microsoft has already upset some PC makers with its Surface, which represents competition in the tablet arena, and the investment to Dell could irritate other hardware makers, said Roger Kay, president of Endpoint Technologies Associates.

Dell has to balance the demands of Microsoft with other investors, Kay said. But, given the debt position, Microsoft will have a say in Dell's future. "It's not going to thrill OEMs, but Microsoft has to look after its interests. There's a lot of motivation for Microsoft to be involved," he said. ■



Camera war brewing in smartphone market

HTC and Nokia are preparing to go head-to-head with new cameras on forthcoming smartphones as they hope to steal market share from Apple and Samsung. Mikael Ricknäs explains

his year will once again see the camera become a key feature as smartphone vendors try to differentiate their products.

"Differentiating a device on looks alone has become almost impossible. This has resulted in manufacturers looking at some of the other features on the phone as a way to differentiate what a consumer gets and give salespeople some hooks, and the camera is a very, very useful vehicle to do that," said Ben Wood, director of research at CCS Insight.

The importance of cameras in everyday life has grown exponentially, thanks to social networks such as Instagram, and more people now use the phone as their primary camera, said Wood. Vendors are therefore focusing on the camera and video capabilities of their smartphones.

At International CES, Sony announced the Xperia Z, which uses High Dynamic Range (HDR) technology when shooting video and still images. The Android-based smartphone also has a burst mode that can take 10 pictures per second at a 9Mp resolution until no free storage remains. Meanwhile, BlackBerry 10 has TimeShift, which takes a rapid series of images and lets you choose the best facial expressions in each, then combine them to make one picture.

But HTC and Nokia have something more spectacular in store. With its flagship One smartphone, unveiled in mid-February, HTC wants to overturn the myth that more megapixels equal better-quality pictures.

Fewer megapixels, better quality

The One features HTC's 'UltraPixel Camera', which is said to let in 300 percent more light than comparable 13Mp cameras. A burst mode can capture 20 stills and a three-second video, which begins before and ends after the One's shutter is pressed.

Meanwhile, having last year unveiled the 41Mp 808 PureView, Nokia is rumoured to be planning to transplant the (actually very good) underlying sensor technology to its Windows Phone-based Lumia family. Whispers suggest a device dubbed EOS - which is likely a codename, since the term is already being used by Canon - will arrive later this year and do just that.

The challenge for Nokia will be to develop a phone that isn't too heavy and/or bulky, which are criticisms often levelled at the 808 PureView and Lumia 920. The latter offers optical image stabilisation but according to Malik Saadi, principal analyst at Informa Telecoms & Media, too much bulk could offset the advantage it offers in terms of image quality.

Nokia's next big launch event was set to go ahead just days after we went to press at Mobile World Congress in Barcelona.

Nokia and HTC both had a difficult 2012, and did their best to compete with Apple's iPhones and Samsung's Galaxy family, especially the S III and the Note I and II.

HTC's revenue shrunk in the fourth quarter of 2012 when compared to the previous quarter, despite the boost that traditionally comes from Christmas shoppers. Year on year, HTC's operating profit dropped by 95 percent.

"The company started 2012 strongly with the One X, and it had a window of opportunity with that device until Samsung arrived with the Galaxy S III. But the marketing approach HTC chose didn't cut through, and it was outgunned," said Wood. Samsung's 2013 portfolio will be critical to the future of the company, he added.

Nokia managed to make a profit during the second quarter of 2012, and sales of its Windows Phone-based Lumia smartphones are slowly picking up – but the company is not out of the woods. Sales in 2013 will be just as critical for Nokia as they are for HTC. According to Francisco Jeronimo, a researcher at IDC, the firm has only two options: significantly increase its smartphone sales or radically change its strategy.

Microsoft Office for Linux: fact or fiction?

A recent rumour suggests that Microsoft is considering making a Linux version of its Office productivity software. Katherine Noyes investigates whether there's any truth in the matter

ould Microsoft really bring Office to Linux? Is an expanded base of Office users worth sacrificing yet another reason to stick with Windows? It's no more than a rumour at this point, originating as it apparently did in the report of a single writer, based on hearsay, at the Free and Open source Software Developers' European Meeting (FOSDEM) in February.

"I was informed that Microsoft is having a 'meaningful look' at a full Linux port of Office, thanks to Linux showing signs of commercial viability on the desktop," wrote Michael Larabel in a post on Phoronix, a Linux-focused news site, citing an unnamed source. The rumour immediately took off from there, and now it's all over the web.

We've reached out to Microsoft, but all we received in response was an email reporting that "Microsoft does not comment on rumours or speculation."

Office on Linux: Good idea

There's no denying that Linux is increasingly being viewed as a commercially viable operating system. Perhaps most notably, Valve is beta-testing a native Steam client for Linux, causing no end of excitement for Linux gamers everywhere and apparently inspiring similar moves by other game makers. Larabel was also the one who first picked up on Valve's plans, and last year was a very big year for Linux in that respect - some are even suggesting that Linux could be the next big gaming platform. Meanwhile, Microsoft's gaming position is uncertain.

And then there's the growing number of hardware vendors unveiling PCs preloaded with Linux - not to mention the ever-expanding Chromebook phenomenon. None of this is good news for Windows.

Microsoft is probably feeling the pinch of Linux's growing acceptance – and if you can't beat them, as the old saying goes, you might as well join them. After all, Microsoft was recently a LinuxCon sponsor.

Office on Linux: Bad idea

On the other hand, Microsoft Office has always been a big cash cow for the company, and the new Office 2013 and Office 365 are still hot off the proverbial presses. It's already the case that some users are questioning whether these new entries are worth the money, particularly in light of all the free and open-source alternatives widely embraced by Linux users.

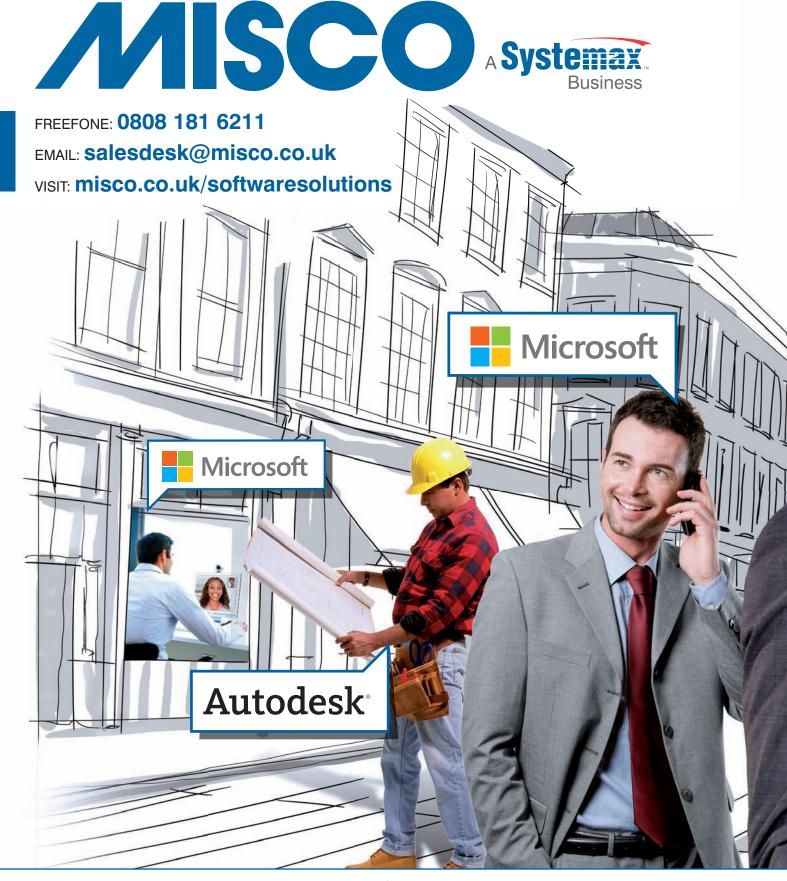
Microsoft doesn't exactly have a history of embracing Linux. Steve Ballmer once referred to the free and open-source operating system as a "cancer", and even OpenOffice has felt Redmond's anti-open-source wrath.

Would Redmond really take such a step to expand the base of Office users at the cost of eliminating yet another hook to keep users on Windows?

That's far from clear. At best, the most we can envision is that Microsoft might offer a version of its browser-based Office 365 for Linux users.

An even better idea, though, could be to port Office to Chrome OS and thereby "ride on the Chromebook's coattails" as Linux Advocates blogger Dietrich Schmitz recently suggested. That, in turn, "would give it entry to the Chromebook market of extensions," Schmitz pointed out.





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CHRIS **MARTIN**







BlackBerry Z10 <<

Smartphone

One of two smartphones to run the brand-new BlackBerry 10 operating system is the Z10. It's got a 4.2in touchscreen, and interaction with the handset is entirely gesture-based. Other features include an 8Mp rear camera and a Micro HDMI port. See page 39 for our full review.

£540 inc VAT uk.blackberry.com

>> BlackBerry Q10

Smartphone

BlackBerry's Q10 also runs the BlackBerry 10 operating system, and should appeal to fans of the iconic physical Qwerty keyboard. With looks similar to BlackBerry's Bold smartphones, the Q10 has a 3.1in touchscreen and an 8Mp camera.

Price TBC uk.blackberry.com



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Converse laptop sleeve

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Converse's new line of tech accessories includes this stylish laptop sleeve, available to fit 13- and 15in laptops. The sleeve is made from PU leather and features a plush interior. It's available in black, white, navy blue and dark purple. £20 inc VAT (13in); £25 inc VAT (15in) currys.co.uk

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The KAKKOii Wow gets its name from the Japanese word for 'cool'. It's a wireless solo speaker that connects to devices such as smartphones and tablets over Bluetooth. The Wow is portable and comes in bright blue, white, yellow, black or red.

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kakkoii-me.com



Samsung Galaxy Express

Smartphone

The Galaxy Express is one of Samsung's latest smartphones, and not the intergalactic shuttle bus its name might have you assume. This Android 4.1 Jelly Bean handset has a 4.5in touchscreen and looks reminiscent of the popular Galaxy S III. It also supports 4G LTE where available.

Price TBC

samsung.com/uk



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touchscreen, a 1GHz Qualcomm processor and a 5Mp camera. Its low price is reflected in its 512MB of RAM and 2.5GB of available internal storage.

ZTE Blade 3

Smartphone If you're looking for a budget Android smartphone, the ZTE Blade 3 might appeal. The Android 4.0 Ice Cream Sandwich handset features a 4in

> £79 inc VAT (PAYG) zteuk.co.uk





Asus Padfone 2

Smartphone-tablet hybrid

The Padfone 2 is an Android smartphone with a 4.7in screen, a quad-core processor and a 13Mp camera. It's a high-end handset - until you plug it into the Padfone Station, which turns it into a 10.1in tablet.

Price TBC

uk.asus.com

>> Canon Pixma MX925

Canon's Pixma MX925 is the firm's latest all-in-one printer, able to print, copy, scan and fax. It includes built-in Wi-Fi, and content can be printed from and scanned to mobile devices via an Easy-Photoprint app. The MX925 supports Apple AirPrint and Google Cloud Print.

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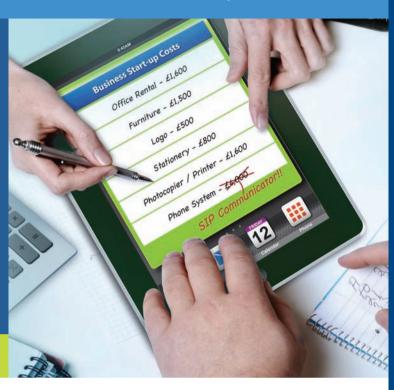
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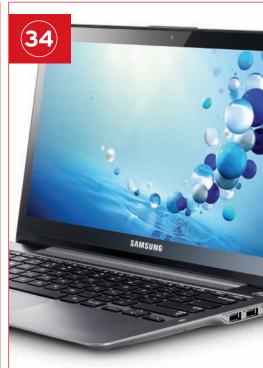












ANDREW **HARRISON**



Wake up and smell no coffee

f you think computer security's boring, warning: security talk ahead. But just maybe, this will be 400 or so words of the more instructive kind of tedium.

It should be no revelation, but the software companies proclaiming themselves as security guardians of your PC have the same agenda as the people making malware: to make money.

Antivirus development was once a noble cause, community help for fellow geeks against the childish pranks of attention-seeking delinquents. But then viruses were developed for profit, and antivirus developers welcomed venture capitalists into their throng, to turn vaccines into self-renewing cash cows.

Do you need antivirus? Or, as it's now swelled and sold, 'internet security'? Equally efficacious antivirus can be downloaded for free from some familiar names, notably Microsoft itself with its Security Essentials. Top names in free Windows antivirus haunt the As, like Aardvark services in a telephone directory - AVG Free, Avast and Avira. Other notables include ClamAV and Malwarebytes.

To bolster their revenue stream, commercial antivirus peddlers now bundle super-sized packages with marketable extras - bullet points such as antispyware, firewalls, online backup and parental control. This earns them an extra 10- or 20 quid a year from you. But, in my opinion, most of this is useless tat.

Take firewalls. The personal firewall took off in 2003 when gaping holes in Windows XP allowed the free passage of worms through

the network and into any PC. Microsoft responded with a firewall in Service Pack 2, and it's been on by default since. But it's not so essential now that Microsoft's patched its RPC failures. Popular operating systems OS X and Ubuntu have no firewall on by default, and these systems are orders of magnitude safer than Windows.

Antispyware no longer works, so I will no longer pay for it. Last I checked, browser cookies and web beacons were still being employed to spy on my PC use, even with this security theatre installed.

There may still be a case for the other extras bundled with internet security, though. Read our round-up on page 64 for details.

The two biggest threats to any modern operating system are Trojans, let in by naïve users; and zero-day exploits in the OS or its installed programs. Antivirus software might alert you to the former as you click Ok on the install dialog. But unbeknown vulnerabilities usher intrusions straight past your antivirus software. The most common back doors are opened by Adobe Flash and, more seriously in recent days, Oracle Java.

Living without Flash is increasingly easy now that it's dead in the mobile space. And if you value your computer security, do yourself a favour and remove Java, too. Because whether you stump up the £50-per-year tax the antivirus industry hopes to charge you, or take the free version using the same virus-spotting engine, you must never assume your gatekeeper software will have a clue about gaping holes introduced by browser plug-ins such as Java.

PC ADVISOR TEST CENTRE

HARDWARE

- 32 Microsoft Surface Pro
- 32 Lenovo Yoga 11
- 33 Apple iMac 27in
- 34 Lenovo IdeaPad Y580
- 34 Samsung NP540U3C
- 35 Matrox DS1
- 36 Toshiba Satellite P855-32J
- 36 MSI GeForce GTX 650 Power Edition OC
- 39 BlackBerry Z10
- 40 Musical Fidelity V-Link 192
- 40 T+A E-Series
- 41 Nikon D5200
- 41 Orée Board

- 42 Google Play Magazines
- 43 PushBullet
- 43 Skulls of the Shogun

SOFTWARE

- 46 Microsoft Office 2013
- 48 ZoneAlarm Extreme 2013
- 48 Eset Smart Security 6
- 49 PowerDesk Pro 8.5
- 50 MobilEdit Basic 50 ExifCleaner
- 50 Duplicate Finder Pro

BUSINESS

- 52 Synology DiskStation DS413
- 53 SellerDeck Business 2013
- 54 Fujitsu ScanSnap ix500
- 54 IRISNotes Executive 2

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Price TBC

Contact

- microsoft.com Read more
- tinyurl.com/cffgrkz

Specification

Intel Core i5: Windows 8 Pro; 4GB RAM; 64/128GB flash storage; 10.6in (1920x1080) IPS touchscreen display; 802.11a/b/g/n; Bluetooth 4.0; 1x USB 3.0; VaporMg case: 2x 1280x720 cameras: mic: stereo speakers: microSDXC: 3.5mm headset jack; Mini DisplayPort; 42Wh non-removable battery; 48W mains charger; 275x173x13.5mm; 900g



£699 inc VAT

■ lenovo.com/uk

Specification

■ tinyurl.com/asjbdxa

1.3GHz nVidia Tegra 3;

Windows RT: 2GR RAM:

64GB SSD: 11.6in (1366x768)

touchscreen; 802.11b/g/n;

Bluetooth 4.0; 2x USB 2.0;

Contact

LAPTOP-TABLET HYBRID

Microsoft Surface Pro

A Windows 8 computer in tablet form has the potential to shake up the business world, given genuine computing- and staying power in a proper portable package.

To be that device the Surface Pro needs to come close to top-end tablets such as the iPad in thickness, lightness and battery life. At press time Microsoft hadn't announced how much this slate will cost or when it will be available in the UK.

The Surface Pro offers Ultrabook speed in a chassis thicker than the Surface RT or iPad's 9.4mm. vet thinner than our 22mm-thick Lenovo X1 Carbon. But compared to that 1.5kg Ultrabook, it's a 900g lightweight. With the stand kicked and keyboard snapped, it truly feels like a tiny laptop.

The Surface Pro is one hot and heavy device, however, and holding it one-handed for any time is a trial.

The Surface Pro has a better display than the RT - still 10.6in but 1920x1080 pixels, giving a decent enough 208ppi resolution. The horizontal viewing angles are good, but the screen is rather reflective and all but useless outside.

Our 128GB version offered only 83GB of usable space. USB 3.0 support lets you attach an external drive, while the Surface Pro also accepts microSDXC removable memory cards.

A score of 4,751 points in PCMark 7 is indicative of high-end performance, as you'd expect from a 1.7GHz Core i5 processor, 4GB of memory and an SSD. The Surface Pro is a fast laptop in tablet form, and it performs as such.

Connectivity is good, with Mini DisplayPort to drive HDMI and VGA displays. With a proper keyboard and mouse the Surface Pro could form your primary PC.

Games such as Civilization V and Dirt Showdown revealed poor graphical framerates from the integrated GPU, but Dirt offered a playable 34fps with Low detail and 1366x768 resolution.

Battery life isn't what you'd expect from a tablet - if unsurprising, given the powerful CPU inside. Despite a large-capacity 42Wh battery, it lasted just over 5 hours in our video-looping test. That's less than other Windows hybrids and nothing compared to the Surface RT's 9 hours-plus.

The Surface Pro comes with a stylus for drawing and writing. It's a passive device that attaches magnetically to one side, and we found it often got in the way. It's sensitive, but laggy, and feels plastic.

The Touch and Type Covers are brilliant tools, but we quickly gave

up our attempt to write this review using the Type Cover. It's usable, but with a real laptop within reach you'll always choose the latter. The keys are small, don't travel properly, and suffer from perceptible typing lag.

The Surface Pro runs full-blown Windows 8, which means you can run any Windows program and even Microsoft Office on your tablet a real boon for business users.

Verdict

The Surface Pro is the best of several Windows tablets we've used. and it makes a good laptop. But in tablet form it's no match for the iPad and best Android devices, and as a laptop it struggles to compete with Ultrabooks. Its portability and performance will be great for a few, just okay for most. It's a good device but, if Microsoft can't make the perfect Windows 8 hybrid laptop/ tablet, who can? 🛛 Matt Egan

LAPTOP-TABLET HYBRID

Lenovo Yoga 11

Hybrid devices that can function as both a laptop and a tablet are in vogue following the launch of Windows 8, and Lenovo's Yoga 11 stands out in a number of ways. It's a lot more stylish than most of its rivals, and it's one of four devices to run ARM-based Windows RT rather than full-blown Windows 8.

At first glance, the Yoga 11 looks like a sleek and slim Ultrabook. The 11in unit is 16mm thick, and weighs a mere 1.2kg. It's a delight to pick it up with a single hand and admire the quality of the design.

It's well built, too, and sturdy enough to withstand a few bumps in a backpack or briefcase. The widescreen 11.6in display is clear,

but not especially bright. The resolution is just 1366x768 pixels, but that's less conspicuously coarse on an 11in screen. The keyboard and trackpad feel comfortable, despite being squeezed into a small casing.

The Yoga is also well connected, with an HDMI port, a headphone socket, an SD card slot and a pair of USB ports - although, disappointingly, these are USB 2.0 not 3.0. The speakers aren't very loud, but they'll do for playing online video every now and then.

That streamlined design is helped by the use of Windows RT which, of course, is designed for mobile devices based around power-efficient ARM processors.

In this case, there's a quad-core nVidia Tegra 3 running at 1.3GHz, backed up with 2GB of memory and 64GB of solid-state storage. It's a reasonable specification for the Yoga's £699 price.

If you don't need to use the keyboard, you can fold back the screen to enter tablet mode. The Yoga 11 is double the weight of a conventional 10in tablet but, unlike some of its hybrid rivals, just light enough to hold in one hand for browsing the web or tapping out notes on the large, responsive onscreen keyboard.

And, if you feel like sitting back and watching some streaming video, you can switch into 'stand' mode by





£1,499 inc VAT

Contact

- apple.com/uk Read more
- tinyurl.com/a95q9vy

Specification

2.9GHz Intel Core i5-3470S; Mac OS X 10.8 Mountain Lion; 8GB 1,600MHz DDR3 RAM; 1TB 3.5in 7,200rpm hard drive; 27in (2560x1440) LFD-backlit IPS: nVidia GeForce GTX 660M, 512MB GDDR5 VRAM: 4x USB 3.0: 2x Thunderbolt: dual-band 802.11a/b/g/n; gigabit ethernet; Bluetooth 4.0; SDXC slot; headphone socket/digital audio output; stereo speakers; 720p FaceTime HD webcam with twin mics: Apple Wireless Keyboard, Magic Mouse or Magic Trackpad: iLife: 516x650x203mm: 9.54ka

PC ADVISOR



ALL-IN-ONE PC

Apple iMac 27in (Late 2012)

Last issue we reviewed the 21.5in iMac, and admired its slimmer. more streamlined design. This 27in version is arguably even more attractive than its smaller sibling, with its higher-than-HD screen, and it boasts extra performance.

The anti-glare coating on the 2560x1440-pixel screen makes a real difference, revealing colours that are noticeably bolder and brighter than our two-year-old 27in iMac. While that model can get worryingly hot at the back, the new iMac rarely rises above ambient temperature. The use of Intel's S-suffix CPU, optimised for reduced power consumption and heat output, could be assisting this cool running.

That high-end screen alone will ensure the iMac finds an eager audience in professional designers, photographers and illustrators. But it's great for any user who demands a comfortable screen. Video-editing work comes easy, and it's one of few Macs that can pass muster for serious gaming action, too.

You could argue that Apple should supply an external DVD drive, but the company is clearly behind a planned migration from optical discs to totally online distribution of music, video and software.

We tested the entry-level of two 27in configurations, costing £1,499. As we hoped, the 2.9GHz

quad-core Intel i5 processor is an Ivy Bridge model, here backed with 8GB of memory and a 1TB hard disk. The full-size 3.5in, 7,200rpm disk contributes to a significant improvement in performance over its 21.5in sibling.

PCMark 7 reported 3,367 points, compared to just under 2,500 for the 1.7GHz 21.5in model. That's pretty good for a machine with a conventional hard disk. rather than an SSD. The nVidia GeForce GTX 660M GPU is a laptop-spec component. but a top-end one and capable of respectable gaming performance.

Running the Mac version of Batman: Arkham City at full 2560x1440 resolution and High detail, the iMac managed 25fps.

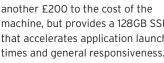
Dropping to 1920x1080 increased this framerate to 35fps, while at 1280x720 the iMac averaged 50fps.

Interestingly, running the Windows version of Arkham City with DirectX 11 produced framerates around 15 percent lower than those of the native Mac version.

If gaming is of particular importance to you, for an extra £200 the 3.2GHz 27in iMac boasts GTX 675M graphics.

Both models can be further upgraded with Apple's Fusion HDD-SSD hybrid drive. This will add another £200 to the cost of the machine, but provides a 128GB SSD that accelerates application launch times and general responsiveness.

10101140991181



Verdict

It goes without saying that there are numerous Windows PCs that can provide comparable speed at a lower price. But few of them - nay, none can match the build quality and the luxurious 27in screen of the iMac. That monitor is ideal for graphics and video work, and will appeal to home users and pros alike. Yes, it's expensive, and it lacks features such as an SSD that perhaps ought to be standard. Yet there's no doubt that for many people the 27in iMac will be the all-in-one machine of their dreams. **Cliff Joseph**



partly unfolding the keyboard so it can prop up the screen on a table.

Tablet mode reveals the limitations of the Tegra processor, though. The touchscreen controls feel smooth and responsive, but there's a noticeable pause as the screen redraws when you rotate

between portrait and landscape mode - especially if documents or web pages are open.

Even so, the Yoga 11 is more than adequate for routine tasks such as browsing the web or getting on with some work. A preview version of Microsoft Office Home & Student 2013 is bundled with the Yoga 11.

Remember, Windows RT can't run legacy software written for the desktop versions of Windows, so you're stuck with what's available in the Windows Store.

The Tegra processor may not be spectacularly powerful, but it is power-efficient. We got a full 10 hours of battery life when streaming video from BBC iPlayer, and lighter tasks such as web browsing or running Microsoft Office might give you close to Lenovo's claimed 12 hours.

Verdict

With an nVidia Tegra processor inside the Lenovo Yoga 11 is only a modestly powered laptop, but it's adequate for routine tasks such as web browsing, running Microsoft Office or relaxing with some streaming video. Its superslimline design is highly portable, and comfortable to use in both laptop and tablet modes. The Yoga's impressive battery life means it should earn its keep when you're on the move. **Cliff Joseph**

£999 inc VAT

Contact

- lenovo.com/uk Read more
- tinyurl.com/baypr3e

Specification

2.4GHz Intel Core i7-3630QM; Windows 8; 8GB 1,600MHz DDR3 RAM; 1TB HDD: 15.6in (1920x1080) LCD; nVidia GeForce GTX 660M. 2GB VRAM, Intel HD 4000; 2x USB 3.0; 2x USB 2.0; 802.11b/g/n; gigabit ethernet: Bluetooth 4: HDMI; VGA; WiDi; Blu-ray drive; SD/XD/MMC/MS slot; JBL stereo speakers; 720p webcam; 72Wh lithium-lon battery; 2.8kg



LAPTOP

Lenovo IdeaPad Y580

Lenovo's Y580 is an all-round multimedia and entertainment system, and a good option for those who don't want to pay over the odds for a mobile gaming rig.

It's more neatly designed than some of the gaming laptops we've seen. Rather than being festooned with glowing lights and buttons, the Y580 has a business-like brushed-metal finish, and a gentle backlight for the keyboard.

It's slimmer and lighter than most gaming laptops, too - the 15.6in models in our recent group test each weighed around 3.3kg. whereas the Y580 is a more manageable 2.8kg. It's still a slab, though, at around 36mm thick, but you can more easily carry it around in a backpack or shoulder bag when required.

The 15.6in screen has a decent 1920x1080 resolution, and produces a bright, attractive image with a wide viewing angle. This Windows 8 lanton has no touchscreen, but we're not convinced that one would be of much use to gamers, who will most likely plug in a mouse in any case.

The keyboard and trackpad are both large and comfortable to use, and the JBL stereo speakers produce a more pleasant and detailed sound than most of the laptop speakers we've heard. A little more bass wouldn't go amiss, mind.

The Y580 has both VGA and HDMI video ports for connection to a larger TV or monitor, as well as Intel's WiDi (wireless display) technology. A Blu-ray writer has got the multimedia side of life covered.

Our review unit costs £999 with a quad-core Intel Core i7 running at 2.4GHz (3.4GHz in Turbo Boost), 8GB of RAM, a 1TB hard disk and an nVidia GeForce GTX 660M with 2GB of video memory.

That's a reasonably strong combination, with the one weak link the 5,400rpm hard drive. This held back the Y580 in the PCMark 7 benchmark, in which it produced a modest score of 2,938 points. Even so, the Y580 will handle demanding multimedia work such as video editing or audio recording with ease.

It's not a flat-out gaming machine, but the Lenovo provides strong all-round performance. The GTX 660M graphics solution doesn't have the horsepower required to run the latest Windows games at their highest settings. Batman: Arkham City and Hard Reset both struggled to achieve 22fps at 1920x1080 resolution, High detail.

However, dropping down to 1280x720 with Medium graphics settings allowed the Lenovo to hit 40fps in Batman and 59fps in Hard Reset, which should satisfy most home users.

Battery life with the GeForce graphics engaged was around only 2.5 hours when looping streamed iPlayer video over Wi-Fi. However, you can squeeze out some more juice from the battery by switching to the Intel HD Graphics 4000 integrated to the CPU when you don't demand the fastest graphics. You'll also find longer runtime browsing the web or running office software.

Verdict

Serious gamers who want the highest framerates and graphics detail at full-HD resolution will prefer a dedicated gaming laptop that's fitted with a more powerful graphics card. However, the Lenovo IdeaPad Y580 works very well as an all-round multimedia and entertainment system, and can handle some casual gaming action when required.

Cliff Joseph

Samsung NP540U3C-A01UK

samsung.com/uk

£699 inc VAT

■ tinyurl.com/ac6gbpb

Specification

1.7GHz Intel Core i5-3317U; 6GB DDR3 RAM: 500GB HDD: 13.3in (1366x768) touchscreen; Intel HD Graphics 4000; gigabit ethernet; 1.69kg

Build: Features: *** Performance: Value: **** The Samsung NP540U3C is a small, stylish Ultrabook that ships with Windows 8. One of its main attractions is a touchscreen.

Like Windows ME, Windows Vista and the odd-numbered Star Trek movies. Windows 8 has failed to impress many of its critics. But this Samsung laptop's touch-enabled screen may be enough to change a few of those opinions.

A major criticism of Windows 8 is that it's neither a desktop- nor a tablet operating system. It's a hybrid of the two, lacking in consistency in either mode. With input choices of touchscreen, trackpad and keyboard, users will no doubt evolve their own ways of getting around.

Still, we noticed incongruities. The charm bar would reveal itself unbidden when we moused up to application menus. Occasionally, Windows 8 apps would launch in response to perceived swipes. This isn't necessarily Samsung's fault, though. It's Microsoft's. And running Windows 8 on a touchscreen Ultrabook is the best experience we've had with the OS.

We have to wonder whether Windows 8 contributed to the Samsung's score of 3,691 points in PCMark 7. It's lower than several similarly specified Intel i5 Core laptops we've used. Still, the Samsung seldom felt sluggish, and it breezed through our Fear

game benchmark test with a playable average framerate of 28fps.

The NP540U3C comes with a 500GB hard drive. Intel's Ultrabook design is founded on solid-state technology, so this is a cost-cutting decision rather than one made to maintain the best user experience. Dearer Series 5 laptops fitted with SSDs are available, but the harddrive option will suit folks who want to store more music, movies and images. AllShare Play software promises to enable you to wirelessly stream media to other devices.

The Samsung impressed us with its robust build quality and good looks. The upper case and keyboard tray are brushed aluminium, stained



£186 inc VAT

Contact

- matrox.com
- Read more
- tinyurl.com/avaLb8x

Specification

Thunderbolt expansion dock; 1x Thunderbolt port; DVI-D (HDMI 1.2 verson also available); 1x USB 3.0; 2x USB 2.0; gigabit ethernet; 3.5mm line/mic input; 3.5mm headphone/ line out; 12V DC input; 24W mains adaptor plug: 200x90x32mm: 472a



THUNDERBOLT DOCK

Matrox DS1

Thunderbolt, the high-speed interface developed by Intel for Apple, promised plenty when it launched in spring 2011. Besides sheer bandwidth, one mooted benefit was the idea of a single cable to replace many, simplifying a desktop's tangle of wires.

The grand idea is the expansion box, a Thunderbolt dock with which one cable takes diverse data roles: a single break-out box as digital hub.

That's the principle behind the Matrox DS1, with its single Thunderbolt port feeding a range of desktop peripherals. You get three USB ports, gigabit ethernet, DVI for a display, plus analogue audio in and out. For ultraportables such as the MacBook Air, this expansion could be a godsend, allowing you to reinstate culled interfaces such as ethernet.

The folded, silver-painted aluminium box is compact - like a tall phrasebook lying flat. The port placement is peculiar: that one Thunderbolt port is at 'front', alongside a single USB 3.0; all remaining socketry is behind. Ranging from the left, there's DVI, gigabit ethernet, two USB 2.0, 3.5mm headphone and line-in jacks and a DC input.

Whichever way you face it, it's not especially pretty - and you'll still have a minor bird's nest of cables. You could stash the entire ensemble out



of sight, providing you don't need to use the USB or headphone ports.

A 24W adaptor plug is included, which ought to be sufficient for connected USB devices. We could charge an iPhone from USB 2.0, although our USB keyboard in the adiacent USB 2.0 was disconnected.

Because of its single Thunderbolt port, the DS1 can be connected only at the end of a chain, where you would usually attach your monitor. For this reason built-in display outputs are offered, DVI or HDMI, which you must choose between at the time of purchase. These are limited to just 1920x1200 pixels, whereas DVI and HDMI support up to 2560x1600 (if you have such a display you're out of luck).

Missing from the roster are any FireWire ports, and digital audio interfaces such as Toslink or co-axial S/PDIF.

The DS1 seems to have compromised on data throughput. Using a Plextor M5 Pro SSD in a Seagate USB 3.0 adaptor, we measured the speed of its USB 3.0 port against the built-in port of a

connected MacBook Pro (Mid-2012). From the MacBook Pro we saw sequential read speeds up to 210MB per second (MBps), and write speeds up to 195MBps. The DS1, though, was able to offer just 151MBps reads and 143MBps writes.

The headphone jack worked well enough, although its output is a little lower in volume than the MacBook's and with slightly reduced fidelity.

The Matrox DS1 ran very warm, but never too hot to touch. We experienced various issues with disconnection, primarily when trying to wake the MacBook from sleep. A fix is promised in the next OS X 10.8.3 update.

Verdict

As the first Thunderbolt dock, the Matrox DS1 shows promise. But it's severely compromised, with poor USB 3.0 performance, limited display quality, and no passthrough to allow full-resolution on larger screens. If you need a one-stop box to add ethernet and few more USB ports, it's an expensive but eminently usable solution. Mandrew Harrison



slate grey. The lower case is fibre glass, tough, smooth and durable. At 1.69kg, it's light for an older laptop and a little heavy by ultraportable standards, but it feels solid and balanced in your hands.

Some niggles arise in the Samsung's smaller details, though. The join between the case and screen feels sharp, for example.

When looking at Ultrabooks, it's difficult not to think of the Macbook Air, with its bevelled screen and seamless transition between glass trackpad and aluminium. The Macbook Air comes to mind when we look at styling, too. The Series 5 is slim, at 19.9mm at its chubbiest point, tapering to 16.9mm at the thin end of the wedge. The rounded edges, generous trackpad and recessed keyboard are all pleasingly familiar to the eye.

We wished for something a little lighter in tone than the 'Metallic Titan' finish, but it's refreshingly different from Apple's laptops.

For such a slender machine, there are plenty of ports. There is a pair of USB 2.0 ports and a three-in-one memory card reader on the right side. On the left there is gigabit ethernet, USB 3.0 and HDMI connectivity. This Ultrabook may be compact, but these features make it a viable all-rounder.

Verdict

Balancing portability with power, the 13.3in Samsung NP540U3C-A01UK is a solid Ultrabook that's flexible enough for home use or a life on the road. Equally suitable for media playback and productivity tasks, the £699 price isn't too bad either.

£999 inc VAT

Contact

- toshiba.co.uk
- Read more
- tinyurl.com/bgaupo7

Specification

2.5GHz Intel Core i5-3210M; Windows 8; 8GB DDR3 RAM; 750GB hard drive; 15.6in (1920x1080) gloss TN display; nVidia GeForce GT 640M, 2GB VRAM; 802.11b/g/n; gigabit ethernet: Bluetooth 4.0: 4x USB 3.0: HDMI: VGA: 6x BD-ROM/DVD drive: SD slot; SRS Premium Sound 3D: Harman Kardon speakers; HD webcam; 48Wh lithium-ion battery; 385x253x33mm; 2.94kg



LAPTOP

Toshiba Satellite P855-32J

In a bold move, the P855-32J has glasses-free 3D. It uses its built-in webcam to track head position, then feeds each eye the relevant image. The effect works reasonably well when you sit directly in front of the screen, but fidget only slightly and the 3D breaks down.

The P855-32J tips the scales at around 2.94kg, yet it's relatively sleek, given its great mass and bulk. The edges are nicely rounded, and the etched aluminium veneer looks stylish, yet understated.

Storage runs to a capacious 750GB, 5,400rpm hard disk and a six-speed Blu-ray drive.

The 15.6in full-HD screen is bright and colourful, but it uses a twisted nematic panel. Toshiba's TruBrite tech takes the edge off glare, and viewing angles are better than most.

The keyboard is reasonably shallow, although we were able to type with good accuracy. The Synaptics trackpad is sluggish.

A 2.5GHz Intel Core i5-3210M is a nice mid-range dual-core chip, but it

doesn't offer nearly the horsepower of Intel's current quad-cores. In Geekbench the P855 averaged 8,744 points; for context, a mobile quad-core 2.3GHz Core i7 would reap around 12,000 points. The 8GB of memory is pleasing, but a PCMark 7 score of 2,716 is no more than adequate.

Relatively decent gaming performance is delivered by an nVidia GeForce GT 640M. In Alien vs Predator, we saw an average 26fps at full-HD resolution and Medium detail, falling to just 16fps using the game's Ultra setting. The 59fps recorded in Stalker demonstrates better performance than laptops that rely on integrated graphics.

Connectivity is standard-fare: there's single-band 802.11b/g/n Wi-Fi, Bluetooth 4.0 and gigabit ethernet. Four USB 3.0 ports are included, two on each side, along with HDMI and VGA outputs. headphone and mic sockets. An SD card slot is built into the front.

The Harman Kardon speakers are easy to listen to, but lack bass.

Battery life is disappointing, with the 48Wh pack mustering little more than three hours in our tests.

Verdict

How you rate this laptop will depend on how much you prize 3D. You'll pay a several-hundredpound premium for the privilege, so you'll need to really want it. Take away the 3D, and the rest is mid-range. Performance is adequate.

☑ Robin Morris

£90 inc VAT

Contact

- uk.msi.com Read more
- tinyurl.com/akt2xom

Specification

nVidia GeForce GTX 650; 1GB GDDR5 RAM; 1,124MHz core clock; 1,250MHz memory clock (5,000MHz DDR effective): 400MHz Ramdac; 128bit memory interface; 384 stream processors; 32 texture units: 16 ROP units: PCI Express: DirectX 11: 2x DVI: Mini-HDMI; 1x 6pin PSU connector needed: 3-year warranty



GRAPHICS CARD

MSI GeForce GTX 650 Power Edition OC

The increasingly extended 6xx family of cards from nVidia gets another member with the GeForce GTX 650. You might expect this to be a trimmed-down version of the GTX 650 Ti. Despite the similar names, though, the two cards are based around different technology, with the Ti built around the GK106 architecture, and this 650 with a GK107 chip at its heart.

MSI hasn't followed nVidia's reference design, so this card looks very different to your typical 650. You can even bolt on a second fan, increasing the cooling while generating little extra noise. This GTX 650 is almost silent in operation, with an astonishingly low TDP of 64W testifying to its power-efficient design.

This being an overclocked card, the MSI promises increased performance over a standard 650. The core clock sees an upgrade from 1,058MHz to 1,124MHz.

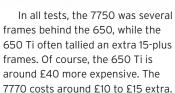
In many respects, the 650 is inferior to the 650 Ti. Notably,

there's just half the stream processors, with 384 against the Ti's 768. Even the Sapphire Radeon HD 7750 can boast 512.

Memory bandwidth is more competitive, with its 80GBps only marginally behind a PNY 650 Ti's 86.4GBps - and some distance ahead of the 7750's 72GBps. But having only 32 texture units really hits the 650, and its texture fill-rate of 36GTps trails the Ti's 59.4GTps.

In practice, the GTX 650 finds itself behind the Radeon HD 7770. although not by an awful lot. In Stalker it beat the 7770, with figures of 39.7- and 36fps at the highest resolutions (the 7770 scored 37.3and 35.8fps). It finished some way behind the 650 Ti, though, which scorched ahead with 53.5fps.

In Crysis 2, the 650's 22.7- and 21.9fps left it adrift of the 7770's 25.1- and 23.9fps. These differences were replicated in BattleForge.



Given the overclocking potential when used with the second fan, we were able to boost the 650 by several frames again.

Verdict

The MSI GeForce GTX 650 Power Edition OC is a decent card. It's great value, has overclocking potential, and offers incredible power efficiency. I Robin Morris





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SMARTPHONE

BlackBerry Z10

BlackBerry's back. Now known only as 'BlackBerry', the company once called RIM has a new flagship phone - this fully touchscreen Z10 - and a new OS, BlackBerry 10.

There are no hardware buttons for navigation, and operation is entirely gesture-based. It's the first phone of its kind, yet BlackBerry 10 allows navigation to quickly become second nature.

Build quality

The Z10 really is BlackBerry's iPhone, and the design most closely resembles Apple's latest smartphone. It's clean and simple, with straight edges and rounded corners. The front looks almost exactly like the iPhone's rear, but with a screen; the back looks like a plastic version of the iPhone. A rubbery texture of tiny dimples is similar to that of the Nexus 7.

It's slightly bigger than the iPhone at 66x130mm, and a slim 9.2mm. The handset is nice and light at 135g, and comes in black or white.

We're not overly impressed by the build quality, though. With a predominantly plastic chassis the phone has a distinctly cheap feel. We don't like the thin-and-flimsy rear cover; give the Z10 a light tap and its internal parts rattle.



Performance

Driving the phone is a 1.5GHz dual-core processor and 2GB of memory. The BlackBerry 10 OS is nippy and, in our tests, showed no sign of lag. Browsing the web is similarly speedy, and a so-so 1,710ms result in the SunSpider JavaScript test doesn't reflect our subjective experience. The Z10 isn't flawless, mind: we witnessed glitches when double-tapping to zoom on our site.

Adobe Flash is present, but turned off in the settings. A dedicated BBC iPlayer app simply opens the browser.

At 4.2in the screen is roomy enough to comfortably browse the web, use apps and watch video content. The 16:9 ratio display has 768x1280 pixels, and its 355ppi density out Retinas every other phone but the Xperia Z and HTC One.

Text and images look crisp and clear. Colours are vibrant, contrast is good and there's plenty of brightness. Our only concern is how quickly the display picks up fingerprints - there's clearly no oleophobic coating here.

Storage runs only to 16GB, a quarter of which is gobbled up by the greedy BlackBerry 10 OS. Fortunately, a microSDXC slot lets you add up to 64GB.

Beside the usual Micro-USB port and headphone jack, the Z10 features Micro HDMI. This lets you hook up the phone to a larger screen. Also here is dual-band Wi-Fi. Bluetooth 4.0, GPS and NFC.

Should the connectivity be available in your area, the Z10 also supports 4G LTE. This is significantly faster than 3G, yet is still a relatively new technology (in the UK, at least).

The main 8Mp camera has an LED flash, a dedicated image signal processor and a f2.2 lens. It can record full-HD video, too, Our test snaps looked good, right up there with those of the Nokia Lumia 920 and iPhone 5.

BlackBerry's show-off feature is Time Shift, a burst mode from which you can select the elements of each snap you like best to create one high-quality image.

Good editing software allows you to crop and rotate your snaps, adjust the white balance and add Instagram-style filters and borders.

BlackBerry 10

The popular BBM IM service has received an update in BlackBerry 10 with video chat. A front-facing camera shoots 720p footage and, in our tests, it looked good. No Skype app is available at present, yet one is said to be forthcoming.

Fully touchscreen operation means that controlling the Z10 is at first rather baffling. BlackBerry 10 resembles PlayBook OS; there's a home screen, which is blank until you launch an app. Open apps are shown in small windows, with four onscreen at any one time and the most recent at top. We'd like the ability to pin favourites here.

Swiping up from the bottom returns you to the home screen, and you hit the X button to close apps.

A traditional app menu sits only a swipe away to the right of home screen. Swiping from the top of the screen brings up phone settings or options related to an open app.

Also new is BlackBerry Hub. an all-in-one inbox/notification centre for emails, texts, calls, voicemail, BBM and social networks. You can select individual accounts for clarity if preferred. The Hub is available wherever in the OS you are.

BlackBerry fans expect a decent keyboard, and this virtual one's not bad. The more you use it, the better it can pre-empt what you want to write.

At press time the renamed BlackBerry World app store had around 70,000 apps. Games, music and movies are available, and you can buy magazines from the BlackBerry Newsstand.

Facebook and Twitter are preinstalled, but some big names such as Amazon Kindle and WhatsApp are missing. BlackBerry claims these apps are coming soon.

A removable 6.7Wh battery is said to provide up to 13 days in standby mode or 10 hours of talk time. We got only a day of use.

Verdict

The Z10 is a plastic iPhone with an excellent screen. A brand-new OS makes this handset the most attractive BlackBerry to date, yet it still can't beat iOS or Android at this price. **Chris Martin**

£516 inc VAT

Contact

- uk.blackberry.com Read more
- tinyurl.com/benpxvj

Specification

1.5GHz dual-core ARM processor; BlackBerry 10; 4.2in (768x1280) LCD touchscreen; 2GB RAM; 16GB storage; dual-band 802.11b/g/n; 4G LTE; Bluetooth 40: NFC: Micro HDMI; Micro-USB; microSDXC card slot: 8Mp rear camera (1080p video); 2Mp front camera (720p video); 66x130x9.2mm; 135g



£229 inc VAT

Contact

- musicalfidelity.com Read more
- tinyurl.com/a3n48cv

Specification

USB digital audio convertor; USB-to-S/PDIF; 24bit; 44.1/48/88.2/ 96/176.4/192kHz capable; 2x quartz clocks; galvanic isolation of outputs; USB Type B input; 1x RCA phono co-axial, 1x XLR male socket AES digital audio outputs: 5V bus power over USB; 95x40x158mm

PC ADVISOR RECOMMENDED

**** Features: ***



USB AUDIO ADAPTOR

Musical Fidelity V-Link 192

Bridging the gap between hi-fi and multi-gigahertz PCs is the task of the V-Link 192. It's an evolutionary step up from the V-Link, a digital adaptor that converts between one digital version of reality and another.

The original V-Link was a USB audio convertor, taking the bitstream from a PC's USB port and translating it into S/PDIF. Mark 1 offered coax or optical; the V-Link 192 removes optical and gains AES balanced digital.

To combat RF contamination the V-Link 192 adds isolation transformers, one per output. It's also specified up to 192kHz sample frequency (up from 96kHz).

The 192 is built around the same box as its predecessor, with simple extruded aluminium, and this time in natural finish. One end has a USB port, the other offers output sockets and eight LED indicators.

Two lights show green when the unit is powered and blue when locked to incoming datastreams. The remaining six show sample

frequency: orange for 44.1kHz to 176.4kHz; then red to show when you're running at peak 192kHz rate.

Two crystals handle re-clocking: one for 44.1kHz and its multiples; another for 48kHz and company. Power comes over USB. No additional drivers are required on a Mac, but Windows users should install the supplied driver.

Rating the sound quality is not so easy. Its job is pass music from input to output with the minimum of disturbance. But there is scope for corrupting the signal, and small timing errors can produce jitter.

In a circuit with our Mac mini and stereo, the 192 did an excellent job.

We tried both V-Link outputs, and usually settled on RCA to the unbalanced input of a dCS Purcell or dCS Delius convertors. AES worked well, too, but we somehow gravitated to co-axial.

Playing music using the V-Link with Soundbooth Decibel the sound quality could be described as divine, and as close to the best CD sources as we've heard. There was an ordered and crystalline clarity to the highest frequencies, supported by

Verdict

palpable blur-free bass.

Added isolation and AES output are worth having. Specified to 192kHz operation, the V-Link 192 can now take on the highest-rate PCM audio ever commercially released. As a tool for the computer audiophile, this Musical Fidelity box is heartily recommended. Mandrew Harrison

£2,690 inc VAT

Contact

- taelektroakustik.de Read more
- tinyurl.com/b2dshos

Specification

Network music receiver; CD player/FM tuner/UPnP streaming client; 2x 94W/ ch (8ohm) PWM amplifier; 32bit/384kHz D-A convertor (accepts input up to 24/192); 3x RCA line inputs; 3x coax S/PDIF; 2x Toslink; 2x USB 2.0 port for hard disk/iPod: ethernet; 802.11b/g/n (Ch 1-11 only); 3.5mm headphone jack



NETWORK MUSIC RECEIVER

T+A E-Series Music Receiver

Once the go-to weapon of hi-fi choice, the music receiver fell out of fashion in the minimalist 1980s. We're starting to see its return, this time with network connectivity. This generously featured T+A E Series Music Receiver is armed with a powerful amplifier and CD player, an analogue tuner, and wired/wireless network options for playing internet radio and music from a NAS.

German audiophile brand T+A Elektroakustik is respected for its innovative range of digital and analogue electronics and loudspeakers. This unit bears that tradition of precision build.

A large vacuum-fluorescent display fills the front, between a peppering of 23 domed buttons. It took us a while to learn its braille-like secrets.

On the left are four sourceselector buttons that let you switch between eight sources. Many of the functions are buried, including the tone controls, network setup, input renaming and favourite saving,

but the 50-page printed manual provides relief.

Some gotchas had us in a loop. A red speaker

icon in the display is a reverse mute indicator. When the red light is unlit, the music doesn't play.

Setting up Wi-Fi we found the T+A could see our neighbours' SSIDs, but not our Channel 13. This receiver seems to only go up to 11.

Power shouldn't be an issue with 94W the E Series has headroom to play loud. Using PWM Class D technology, it can grasp bass drivers for a tight, controlled sound.

The sound is clean, smoothed off and sanitised, but ultimately tidy. In our tests it seemed to hold back in musical conviction, though, and lacked the air and transparency to bring music to life.

The CD player is a first-class source, thanks to fine electronics. Its 24bit/192kHz-capable DAC can also



sources such as a PC, set-top box, DVD or Blu-ray player. The DAC sound can be switched with extra oversampling filters.

Analogue radio reception is exemplary, with FM 'full quieting' possible for hiss-free sound. Internet radio streamed from a NAS worked well, and was reasonably easy to navigate by remote. Sadly, there's no dedicated mobile app to ease the task of control.

Verdict

The E-Series receiver has fine build, an easy-to-read display and superb digital converters. But, for the price, this all-round music hub misses musical involvement and needs an easier way in. <a> Andrew Harrison



£700 inc VAT

Contact

- europe-nikon.com Read more
- tinyurl.com/aje7vwa

Specification

DSLR camera; 24.IMp; 23.5x15.6mm CMOS sensor; 18-55mm VR lens; adjustable TFT colour monitor, 920k dots; ISO 100 to 25,600; SD/SDHC/ SDXC slot; 129x98x78mm; 505g (body only)



CAMERA

Nikon D5200

The Nikon D5200 is a mid-range digital SLR camera that lets even those without the fattest wallets take great pictures.

The D5200 offers excellent picture quality. Our images were vibrant and had good colour depth, with plenty of detail in the shadows and highlights. Noise is virtually undetectable up to about ISO 6,400. A little softness can be noted, but this is easily fixed in a photo editor.

Video mode provides creative control, allowing you to manually adjust the aperture, shutter speed and ISO, and offers the option to shoot in full-HD at 30-, 25- or 24fps.

The resulting video is of a high quality and, when used with a tripod, the D5200 is able to deliver smooth, crisp footage. Autofocus is available in video mode, although we found the jarring sound made while the camera 'searches' is picked up by the built-in stereo mic.

The Nikon's build quality is good, with a deep hand grip in the front and a rubberised thumb grip on the

rear. The body alone weighs 505g, which is reasonably light for a dSLR, and means this Nikon is comfortable to hold.

The supplied 18-55mm kit lens is a great starting point for anyone new to dSLRs. The K-mount allows you to re-use other Nikon lenses, too.

A 3in articulated LCD screen is crisp and vibrant, with accurate colours that help you judge balance. An anti-glare coating combats bright sunlight. The LCD folds away neatly to avoid scratches, then out to the side. In Live View mode this enables easy shots from awkward angles, such as over heads in a crowd.

The D5200 is straightforward to use, with a wheel on top and an easily navigable screen interface. Although they don't have dedicated buttons, ISO and exposure are easily found and adjusted.

The Nikon's 39-point autofocus proved easy to use and allowed excellent results, even in low light (if a little slower here, of course).

ce.
ght The inclusion of an Effects
mode is interesting. It's unlikely
that many photographers will
frequently use these, but the effects

Vikon

Verdict

and selective colour.

The Nikon D5200 is ideal as a first dSLR or as an upgrade from an older model. It's well-built, comfortable and easy to use, and offers decent picture quality at an accessible price. Our only quibble is a lack of sharpness in some images.

Becca Martin

are a nice touch and include tilt-shift

€125 (£108)

Contact

- oreedesign.com Read more
- tinyurl.com/afx6keq

Specification

Bluetooth wireless keyboard; compact tenkeyless design; Mac/ iPad or Windows key layout; US, UK, German, Swiss, French Canadian or English Canadian localisation; 2x AAA batteries; 292x136x20mm; 332g



KEYBOARD

Orée Board

Personal computers were born in the plastic age, so there's always something beautifully retro about PC peripherals crafted from wood.

The Orée Board is a Bluetooth wireless keyboard, closely modelled on Apple's Wireless Keyboard. It's a delicious idea, putting something more natural, organic and tactile than plastic at your fingertips.

Dark walnut or light maple versions of this keyboard are available. You can also choose from various languages, and specify the font used for key legends.

The fit and finish are excellent, with each key accurately cut to size and placed within its cutout. These have even been arranged so the wood grain flows from key to key.

The legends are feint, but legible. Other markings are less clear: the Mac/iPad keyboard is a hybrid model for two different platforms, so you get a Mac Command key as well as iPad shortcuts such as Search.

Three small LED holes on top indicate Caps Lock, Bluetooth

pairing and that the battery is running low. It's powered by two AAA batteries, accessed through a hatch underneath.

Paired with a MacBook, our first issue was with the lack of bumps on the home keys F and J. This made locating keys by touch nigh-on impossible.

When typing, the keyboard would wander around the desk. The maple version is exceptionally light at 332g, with a very smooth bottom. There's nothing to secure it in place.

We found the key-switch action soft. It's directly comparable to the Apple keyboard, but the flattop keycaps here wobble on their membrane switches. It's a very quiet action, although a slight warp to the wood meant the keyboard would rattle on the desktop as we typed.

Our typing accuracy suffered, with some characters appearing twice and others – especially W – needing extra taps to print.

Double-spaces were a frequent occurrence, too.

We also experienced connection issues. The Orée uses a Broadcom Bluetooth 3.0 chipset, which wouldn't always wake our laptop from sleep. Several times the keyboard lost its connection.

Verdict

Much as we wanted to enjoy this wooden technology curio, we were glad to return to our usual keyboard. The concept is great and the woodwork difficult to fault, but its slipperiness, lack of embossed home keys and disconnection issues are frustrating.

Andrew Harrison



MFDIA APP

Google Play Magazines

Free

Contact

- play.google.com
- Read more

 tinyurl.com/d4tto4k

System requirementsAndroid 2.2 or later;
6.7MB storage

Google Play Magazines is a free app that brings Apple Newsstandstyle digital magazines to devices running Android 2.2 or later.
Or rather, it offers another way to access digital magazines on your Android smartphone or tablet.

Play Magazines takes its place in the Google Play pantheon along other Android-native media apps, such as Play Music, Play Books and Play Movies & TV. Like those apps, Google Play Magazines is easy to use and good to look at, but it, too, faces the challenge of convincing Android users to choose it rather than its rivals. Android is to its credit open to other vendors, so it's unlikely that the Play apps will ever achieve an iTunes- or Newsstand-like dominance.

The app offers a wide selection of magazine titles in digital format. There are literally hundreds of magazines to choose from, in categories ranging from our own technology sector through cooking to travel, fashion, sports, photography and more. From the app you access the Play Store to buy individual issues or subscriptions. There is a good selection of 14- or 30-day trials, and the reading experience on an Android tablet or even phone is pretty slick, offering HD viewing on- or offline.

What's on offer?

The app itself is free and, in terms of content and pricing, Google Play Magazines is to Zinio as Play Books is to Kindle. There are lots of titles, but the older platform probably has more at this stage. And pricing is about the same, but you can always check and use multiple platforms





We'd expect Google Play to become the most populated magazine app on Android, though. In essence, Google has taken away from publishers the task of creating a digital magazine from their existing print product. Google takes the print magazine in PDF and makes a digital magazine for publishers. That, combined with a simple revenue-share deal, makes being on Play a no-brainer for publishers.

As with all the Play media apps, Play Magazines is in essence a reader app, with a side door into the Play Store for content. Once you've installed and opened the app, you click the now ubiquitous Play icon to go and hunt down some mags to read. After you've bought them or started a trial, the magazines appear in your app, but you have to download them before you can start reading. This is an important point, both good and bad.

On the positive side, once you've downloaded a magazine it is yours to read whether or not you have a web connection. And you can make it so that your Play Magazines subscriptions automatically download. But some magazines can consume more than 1GB, so be

wary of filling with magazines your tablet or smartphone's storage capacity.

Reading magazines is simple and intuitive. You swipe or tap to scroll through pages. Holding your device in portrait- or landscape-mode changes the view from single page to spread, and so on. You can tap to pull up page thumbnails for fast flipping, or find the table of contents on the bottom-left. Now familiar gestures such as pinch-to-zoom are in attendance.

Look and feel

One obvious effect of the effort-free production of magazines in Google Play Magazines is that they look like exactly what they are: PDF versions of print magazines. This isn't necessarily a bad thing: in our view some digital magazines are more akin to apps, and the additional functionality thrown in to some of the more adventurous e-magazines can feel like overkill.

But simplicity is all you get with this app: the content of each page with a black border to fill in any spaces around the edge. There's no video for instance, although Google assures us there will be in time.

Even the app home pages are a little on the simple side of dreary. You see flat magazine covers on a black background. The 'Recent' view does swap this for a carousel, though. It's functional either way, and that's what counts.

One interesting feature is the 'View text' option that you can select when viewing a magazine. This strips out all the images and words and displays them on Google's own app-like template. As a halfway house between print magazine and website it works really well, allowing you to read the collated monthly or weekly best of your chosen title, onor offline, and in an e-reader style.

Verdict

If you have an Android device on which you can install Play Magazines, and you like reading magazines, this is an app you should have. It's simple to use, functional, and has a good stock of magazines. Give it a whirl.

Matt Egan

PRODUCTIVITY APP

PushBullet

Free

Contact

■ pushbullet.com

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System requirements

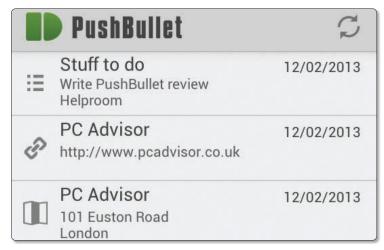
Android 2.3 or later; 784kb storage

PushBullet is a free Android app that simplifies the sharing of data between your devices, and places all that data in a central repository for easy access. It offers simple, but incredibly useful, functionality.

Using PushBullet involves downloading the app and signing in with your Google account. Then, from pushbullet.com, you can push from your PC to your phone or tablet files, a shopping or to-do list, reminders, addresses and anything else you need for the day ahead.

Any devices on which you have the PushBullet app installed will be listed in the PC's browser, along with buttons that let you either push files to that device or enable others to do the same. So, for instance, if you're meeting a friend after work for a drink, they can directly push the address of the bar to your phone.

To share some data with your phone or tablet, click 'Push to this device', enter a note, address, list or website link, or browse to a file on vour PC (smaller than 10MB), then



click Push It! Open the app on your mobile device and that data appears at the top of the list.

If the data is an address you can open it in Google Maps or any other navigation app preinstalled on your device, and if it's a URL it will automatically open in your default browser. Files open in the relevant app; notes are displayed in a logical manner; and you can tick off items in a to-do list as you complete them.

You'll be alerted to new data by Android's notifications bar - if you're using Jelly Bean, you won't even need to open the PushBullet app to access and interact with the data. There's also a handy extension for the Google Chrome browser.

PushBullet is a simple app if all you want to do is get files from A to B. The developer hopes to make the reverse possible in a future update.

Pushing files from a PC or laptop to a phone or tablet should be easy, but it rarely is. With PushBullet, that's all changed. A very useful app. Marie Brewis



Skulls of the Shogun

£3.99 inc VAT (phone) **£6.99** inc VAT (PC) **1,200** points (Xbox)

■ microsoft.com

■ tinyurl.com/be4dcv6

System requirements

Windows 8, 135MB storage; Windows Phone 7.5/8, 56MB storage; Xbox 360, 206MB storage



A turn-based strategy game doesn't seem like a turn-based strategy game when it's populated with cartoon skeletons, midget Samurai and bobble-headed Japanese deities. Skulls of the Shogun isn't a case of style over substance - it's style altering and enhancing substance.

This game of small armies battling across lavish, but cheerfully preposterous 2D environments, is the tale of a recently demised ancient Japanese general traversing the afterlife in the pursuit of vengeance and honour. But what would, in other hands, be haughty talk of duty and ritual is here a merry farce, strewn with gags and silliness.

The battles are turn-based strategy deconstructed, with all fluff and bloat discarded, then reconstructed as something lean and well-balanced. There are just seven types of unit and, in most cases, you'll have only five in play at once. Each army rarely exceeds 10 troops, so it's a matter of using everything you've got very wisely.



Reinforcements are quickly and regularly gained, so losing units is a common and non-heart-breaking occurrence. There's a lot of scope to come back from an apparently losing situation.

Attacking an enemy almost always causes damage to your own guys, so you can't just charge in gung-ho. Plus there's no fog of war to conceal an army's movements.

Despite very neatly carrying its singleplayer mechanics over to a high-speed, high-tension multiplayer mode, the small number of units

and maps means it could relatively quickly wear thin.

The PC feels like Skulls' natural home, but it's available only on Windows 8. If you have a Windows phone or tablet, though, Skulls is an arguable essential.

Verdict

Skulls of the Shogun is a smart, slick and entirely successful attempt to make turn-based strategy thrilling and charming rather than dry and convoluted. Highly recommended.

X Alec Meer

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PRODUCTIVITY SUITE

Microsoft Office 2013 Professional

£390 inc VAT (1 PC)

Contact

■ microsoft.com

Read more

■ tinyurl.com/853ykcg

System requirements

1GHz processor with SSE2; Windows Server 2008 R2/Server 2012/7/8: 1GB RAM: 3GB drive space; DirectX 10-capable graphics: Microsoft .Net 3.5 or later

NEXT MONTH:

OUR 10-PAGE **DEFINITIVE GUIDE TO OFFICE 2013**

desktop software continues its cyclic updates. Office 2013 is the latest outing for Microsoft's flagship productivity suite. A redesign sees clean white

While Microsoft's new Office 365

online subscription service sees a rolling update schedule, the

backgrounds throughout the productivity suite, and the net effect is less clutter. More subtle is the use of animation that can make transitions look more fluid.

Word, Excel and PowerPoint no longer show a blank page at launch. Instead, a landing screen presents templates and other options for creating or opening a document.

The suite integrates with Microsoft's online storage service SkyDrive, as well as commercial SharePoint server accounts. This arrangement makes available documents wherever you need them.

Microsoft Word

Word's most visible changes is a Read Mode that dispenses with the ribbon toolbar and lets you see documents like a printed book. You can't edit, but you can access search tools for lookups related to highlighted content. A navigation pane is useful for getting around lengthy documents.

You can click graphical elements to enlarge them for closer study, then click them again to return to the original layout. Word automatically bookmarks the page you were last on when you closed a document, and returns you to it when you reopen the file. That bookmark travels with the document and, when saved to SkyDrive, your other Office 2013 installations also open on the bookmarked page.

WORD has a new Read Mode that allows you to view documents like a book

If you're using a web-connected PC or device, you can watch video embedded in a Word document without leaving the program. You can search photo-sharing sites for images and directly add them to the document. The same goes for screenshots: an Insert Screenshot command brings up thumbnails of all running apps on your computer, and inserts the one you choose ready for cropping. Insert an image or other object, and Word reflows the text immediately.

A new Design tab gathers in one place styles and other formatting options, so you can easily try out different looks for your work. Word finally supports PDF editing (converting PDFs to Word, then saving them as PDFs). In our tests, Word mangled the formatting on a complex PDF, but it fared better with simple forms.

You can show your document to the Wordless by sending a Share link (with or without editing privileges). This lets the recipient see and potentially edit the document in a web browser. You can also post to social networks a read-only or read/write link to the document in SkyDrive.

> Microsoft has tweaked Word's review and revision tools. too. The cleaned-up Simple Markup view spares you the clutter of deletions and comments in a heavily edited document. Word now supports replies to comments for more orderly tracking of conversations, and when a comment's been addressed.

vou can mark it as such. You can password-protect your documents to prevent tracking changes, which stops others from fiddling with a document without your detection.

Microsoft Excel

Excel 2013 has some appealing and potentially useful additions that should help with the entering, analysing and presenting of spreadsheet data.

Flash Fill can detect patterns beyond the numerical and date patterns that Excel has long recognised, and autocompletes empty fields as appropriate.

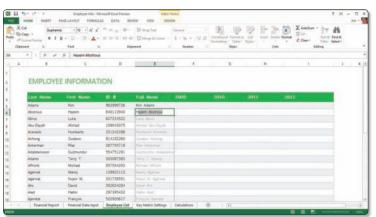
For example, if you've pasted into a column a list of similarly formatted email addresses (say, firstname. lastname@domain.com), you can type the first two first names into the first two cells of another column, select the column, and click the Flash Fill to see Excel instantly insert the rest.

Excel 2013 makes it easier to wrangle data in a spreadsheet, too. Select an entire table, and a Quick Analysis button appears by the lower-right corner. Click to view thumbnails of several graph and charting options, then click one to apply it.

Not sure how to massage the data? Excel offers buttons that generate chart and pivot table recommendations. A timeline slicer makes it easier to examine data from a specific time period. Creating mashups with third-party data sources is also easier.

Each workbook gets its own window, which makes viewing two or more at once a lot easier. As with Word, you can share your spreadsheets with non-Office users by sending links.

EXCEL Flash Fill can detect patterns and autofills empty cells as appropriate



Microsoft PowerPoint

Changes in PowerPoint 2013 mirror those in Word, including a reading view, the capability to add screenshots and art from photo sites, object zoom, instant visibility for formatting changes, enhanced commenting features, and the Design tab.

The latter simplifies adjusting design elements by showing options in a new formatting pane to the right of the slide. You summon the pane by right-clicking a selected object, such as an image, shape or text.

Enhanced media support includes wider video-format support and the option to have background audio play across your entire presentation. When presenting with two screens, Presenter View makes it easier to access notes and preview the next slide. If the screens are reversed, a Swap Display command quickly deals with the problem. Co-authors can collaborate on a presentation using the PowerPoint Web app.

Microsoft Outlook

With its last refresh Outlook got a ribbon, and grew cluttered. Microsoft has addressed this issue with a simple two-pane design comprising a list of messages and a preview pane. You can quickly respond to a message by clicking the Reply button in the preview.

Outlook will oblige if you want to have open more than two panes, too. You can choose between several layouts in the View tab, including ones with panes for your calendar, your to-do list, or the People pane, in which you can also see updates from social networks you've set up using Outlook Social Connector.

At the screen bottom you can click either Calendar, People or Tasks to switch views. or hover the mouse to peek at their content.



POWERPOINT Presenter View makes it easier to access notes and preview the next slide

Mailtips will bring to your attention possible issues, such as if you fail to forward an attachment. In corporate environments where IT admins set policies for email, Outlook will point out potential violations. One curious innovation: the Calendar view now includes weather information.

OneNote, Publisher, and more

Microsoft has endowed other Office apps with design improvements similar to those in the core programs, including the capability to suppress all or part of the ribbon and the landing page at launch.

OneNote benefits from the easy screenshot capture; it also sports improved tools for modifying tables, and can update embedded Excel and Visio files when their content changes. As with other Office apps, you can share a OneNote notebook stored online by sending a link.

Publisher gets the same new design. tools as other Office 2013 apps. It now lets you collect images on the area next to a document, and then try them one at a time by using a Swap Image button.

Visio gets new styles and templates. It supports collaboration features, but for SharePoint users or Office 365 subscribers only - there's no SkyDrive support. A new wizard helps you link to data sources graphical elements in your diagrams, so if the data changes the diagram does too. Sources supported include Excel, SQL server and SharePoint External Lists.

Microsoft offers two versions of Project 2013 with standard perpetual licences: Project Professional and Project Standard. But Microsoft's push is now clearly not Office 2013 but Office 365, or at least a version that can be hosted within a business.

Pricina

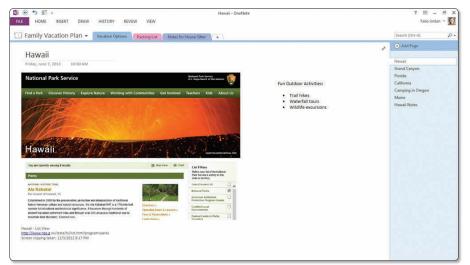
The entry-level version is Office 2013 Home & Student, which comprises Word, Excel. PowerPoint and OneNote for £110. Office 2013 Home & Business adds Outlook for £220. For anyone who needs Publisher and Access, too, Office 2013 Pro costs £390.

Prices are higher than comparable versions of Office 2010, and also cover just one installation. If you use Office on multiple PCs, you'll find Office 365 seats cheaper over several years.

Verdict

The four core programs, Word, Excel, PowerPoint and Outlook, gain new formatting options and view modes, including options for collapsing or hiding the ribbon introduced in Office 2007. For people who work on a single PC, or who are happy using third-party cloud services such as Dropbox or Google Drive, upgrading - especially from Office 2010 - will be less appealing, given the expense. It's good, but not an essential upgrade. **IDG staff**

ONENOTE lets you add cropped screenshots from any type of file or image to your notes



SECURITY SOFTWARE

ZoneAlarm Extreme 2013

£35 inc VAT (3 PCs)

Contact

- zonealarm.co.uk
- Read more
- tinyurl.com/acrnvoc

System requirements

2GHz processor; Windows XP/Vista/7/8; 2GB RAM; 250GB drive space

ZoneAlarm started life as a Windows firewall, with a freeware version for personal use. Security Extreme 2013 is a paid-for product that adds a variety of extra features to provide a rounded Windows security suite.

These extras include antispam, PC Tune-up, parental control, online backup, private browsing, download protection, keylogger jamming, Facebook privacy scan and online tracking prevention.

The main control screen is a simple, three-panel affair, with panels labelled Computer, Internet and 'Identity & Data'. Unless there are any reported problems, each displays 'Protected' in green letters.

Click the View Details button on any panel to enter the control screen, which offers more details and switches to turn on and off the various elements. You can also drill down to more advanced adjustments.

Quick and full scans can be started from a subsidiary screen of the control panel, but if you want to scan a particular file you have to right-click it within Windows and choose the ZoneAlarm menu option.

PC Tune-up is included, but by



ZONEALARM security is now available in a fully functional Windows suite

upgrade the program to add other functions to the mix.

Scanning our usual 50GB basket of test files took 36 minutes 27 seconds, but ZoneAlarm examined only 8,767 files. This gives a scan rate of 4 files per second, which is the second-slowest we've recorded. ZoneAlarm did, however, do a good iob fingerprinting the files, and a second scan required just 19 secs.

A 2GB file copy took 37 percent more time when a ZoneAlarm scan running. This is better than average. but it's not among the best times we've seen from security suites.

Independent German testing lab AV-Test awarded ZoneAlarm Free 13.5 out of a possible 18 points, which puts it in the middle of the pack for performance.

Breaking down this overall score, ZoneAlarm received 5.5 out of six points for Usability, with a low resource hit and only one false positive in two months of testing.

Its results were rather average in the Repair section, although ZoneAlarm was particularly good at removing malicious components and rectifying unwanted system changes.

The security suite took a dip in the Protection category during the second month of testing, in which it showed some difficulties in detecting zero-day attacks.

Verdict

ZoneAlarm Security Extreme 2013 is a serviceable security suite that covers most bases. It offers useful online backup, and a better-thanaverage PC Tune-up component. Its antivirus protection is fair, and it's one of the lower-cost paid-for security options.

Simon Williams



default not installed. Licensed by Large Software, it's an automated PC clean-up app. The ZoneAlarm licence includes system backup, scan for broken files, file repair and defragmentation, but you can

SECURITY SOFTWARE

Eset Smart Security 6

£50 inc VAT (3 PCs) Contact eset.co.uk Read more ■ tinyurl.com/amhuk7h

System requirements Windows XP/Vista/7



Eset Smart Security 6 is the latest incarnation of the company's internet security suite. It includes antivirus, antispyware, antispam, a two-way firewall, parental control, antiphishing, a social-media scanner and an anti-theft module.

Missing from that list are features such as tune-up, a secure browser and online backup. The suite is available for between one and three Windows PCs, and on a one- to three-year subscription.

The main new feature is anti-theft. If Smart Security 6 is installed on a Windows laptop that goes missing, you can report it to the secure Eset site from another machine. The software is then

instructed to report the portable's approximate position, provided that it's connected to a wireless network.

If the machine has a webcam, it can also be configured to take pictures of the thief. All your files and accounts on the machine can be hidden, too. The feature is pretty thorough, and it could give a thief a nasty surprise.

Smart Security's interface is clean and simple, to the point of minimalist, but covers all the essentials, if you dig around. There are panes covering scan, update, setup and tools. The Tools pane includes a statistics panel and system inspector, and offers a tool for burning a rescue disc.

The software examined 120,178 files in our scanning tests, at a scan rate of 74.4 files per second - this is a mid-range result.

Smart Security is adept in fingerprinting files: a repeat scan looked at only 17,377 files and completed in less than two minutes.

The software's resource footprint is fair, although it took 56 percent more time to copy a 1GB file between drives with a virus scan running.

According to the German test lab AV-Test, Eset has considerably improved the performance of its scanning engine and software. That said, it has yet to evaluate version 6 of Smart Security. Version 5.2 was awarded 13 out of a potential



FILE MANAGER

Avanguest PowerDesk Pro 8.5

£30 inc VAT (1 PC)

Contact

- avanguest.com/uk
- Read more
- tinyurl.com/cfemm7f

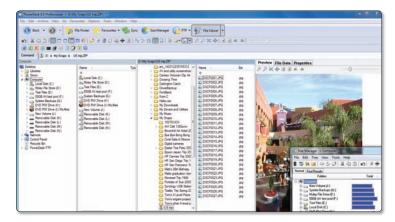
System requirements Windows XP/Vista/7; 32MB RAM: 40MB drive space

Windows has included its own file manager since Windows 3.0. previously known as Windows Explorer and, now, in Windows 8, File Explorer. To expect people to pay for software that does the same job, you need to offer some genuinely useful extra functionality.

PowerDesk Pro 8.5 is a two-pane file manager that lets you view two folders in a single window. This can simplify operations such as copying and moving files and folders. The arrangement of panes and the folders open within them can also be saved, allowing you to speed access to frequently opened folders.

There's an integrated FTP client, which now supports Secure FTP. You can move and copy files in both directions, just as if the remote site were a local drive. Also integrated is read support for more than 30 compression standards and the creation of zip archives.

The Sync function keeps in sync the contents of two folders, which is useful for ensuring you always have the latest version of a file whether you're working on your desktop or your laptop, for example, as well as for backup purposes. A small pop-up window lets you select the folders you want to sync and shows at a glance which files differ between the two. You can select which files take precedence, using a number



POWERDESK PRO offers multi-pane navigation of your files in Windows

of filters, mostly based around synching to the newer version.

There's a file viewer built in, which copes with most common file types, including document, image, audio and some video formats. Sometimes the program uses its own code, and other times it calls on Windows facilities, such as using Media Player for playing MP3 files. If it can't cope with a file type it shows the ASCII content, which isn't much help. There's a hex editor, too, if you want to get down and dirty.

The Size Manager is another pop-up window, showing storage usage on all your drives as small bar graphs. It aims to help you balance the load should you want to shift files between partitions. However, in our experience, people organise data for their own convenience, not to balance space between drives.

Several forums list complaints about the speed of PowerDesk, but in version 8.5 Avanguest appears to have solved the problem. It was mostly quick in our tests, although we occasionally experienced slow refreshing of file lists and a one-off Size Manager freeze-up, which required a system restart.

There are few new features in version 8.5. Two additions are 'path breadcrumb', which logs your file movements, and pane lock, which mirrors the view mode in each pane.

Verdict

Avanguest PowerDesk Pro 8.5 offers more features than Windows' own file explorer, although not all are of great value. Whether you feel the added convenience is worth paying £30 for is another matter. Simon Williams





SMART SECURITY

shows a marked improvement over previous offerings 18 points, whereas its predecessor (version 4) managed just 11 points.

Smart Security 5.2 showed some improvement in all areas of AV-Test's assessment, clocking up an extra half-point in the Performance

and Usability categories, and a full point in Repair.

On Performance it scored four out of six points, with 100 percent detection of older widespread malware, 97.5 percent of recent introductions (slightly above average), and 90 percent of zeroday attacks (slightly below average).

A Usability score of 5.5 points supported Eset's claim that the product is light on system resources. AV-Test measured a 7 percent slowdown of its test machines, against an average of 10 percent, and it reported no false positives.

It didn't fare as well in the Repair category, with an overall score of 3.5 points. Eset was still about average

in its ability to detect rootkits and stealth malware, though, and well above average in the removal of bad components and remediation of critical systems. Smart Security stumbled on the removal of active components.

Verdict

Eset Smart Security 6 is an internet security suite that covers most of the core functions, although it's a little thin on extras such as online backup and PC tune-up. In both our own tests and those conducted by AV-Test of version 5.2, the suite performed well, but it isn't at the leading edge of Windows security offerings. Simon Williams



Clean Setup Clean Options File Options Extras Remove only the following tags (the rest will be unto Remove all tags except the following Unknown tags (not in list below Main Image Description (\$010E) Equipment Make (\$010F Camera Model (\$0110) Orientation (\$0112) X Resolution (\$011A) Y Resolution (\$011B) Software (\$0131) Date & Time (\$0132)



SMARTPHONE MANAGER

MobilEdit Basic

Think your smartphone and a PC don't mix? Think again. MobilEdit for Windows bridges the gap between the two, allowing you to manage your phone and its contents from the big screen of a desktop or laptop.

The £11 price covers two phones and one PC. A £22 Family Edition ups that to five phones, while a £38 Professional Edition covers 10 phones. A free version, called MobilEdit Lite, allows you to view your phone's contents, but not write to it. Weirdly, you can purchase MobilEdit Pro for £2.99 as an iPhone app and get the Windows version for free. For Android, MobilEdit PC Suite is free.

MobilEdit lets you manage almost any kind of mobile, from basic handsets to iPhones and Android smartphones. You connect your phone to your PC via USB, Bluetooth or IrDA, and the software automatically recognises it. MobilEdit can connect to some Android phones over Wi-Fi, but you'll first need to install a MobilEdit Connector app on your handset.

Once your phone is connected, MobilEdit allows you to browse its contents using a Windows Explorer-like folder structure. While iPhone owners may baulk at its price tag, MobilEdit allows you to view your iPhone's contents on a more granular level.

MobilEdit also lets you transfer photos and videos to and from your phone, send text messages from your keyboard, and install applications to your phone.

Verdict

MobilEdit will appeal to anyone looking to manage their mobile phone from the comfort of their PC. It lets you examine and back up your phone's contents.

Liane Cassavoy



METADATA EDITOR

ExifCleaner

When you take a digital photo, you are capturing more than just the scene. You're also gathering a range of information known as Exif metadata, which could be personally identifiable and compromise your privacy.

Information can range from the mundane such as the camera make and model, to resolution, exposure, light source and so on. But it can also record where you took the photo and on what date. All this information may be preserved when you post it online. Anyone could use Exif data to find where in the world you are, and tie you to a specific place at a specific time.

Even computer hackers who should know better have been caught out: Higinio O Ochoa III, a member of Anonymous spinoff CabinCr3w, was caught by Australian police last year after posting a photo of his girlfriend that included GPS coordinates.

ExifCleaner protects your anonymity by removing this data. You can individually clean images, or batch-strip an entire album.

You can decide whether the app should place a cleaned duplicate of the photo in the same folder or overwrite the original.

ExifCleaner works fast and, when it's finished, you can simply click on a photo and check the right-hand data column to see that everything is indeed gone.

A portable version doesn't need to be installed to run. At £13, the software isn't cheap, but will be a good buy for many of us.

Verdict

ExifCleaner can strip out some or all Exif data at the click of a button. If you're concerned about people tracing your snaps to you, it's a useful utility. Mark O'Neill

£12 inc VAT = superutils.com = tinyurl.com/ax9vwqf **System requirements** Windows 2000/XP/ Vista/7/8

FILE UTILITY

Duplicate Finder Pro

Finding and removing duplicate files helps organise your hard drive and free up space. You can speed the process with a utility such as Ashisoft Duplicate Finder Pro, which scans your drive to find these duplicate files.

Duplicate Finder is free to download and use with basic scanning abilities. The paid-for Pro version adds filtering abilities, more scanning options, advanced duplicate marking and the ability to protect folders.

Four scanning options comprise 'Byte by byte', 'Same file names', Music duplicates, and 'Non-duplicate unique files'. The interface is easy to use, but it's not the most intuitive.

Duplicate Finder scanned our hard drive in seconds, and found 67 duplicate files totalling 13MB. That's unimpressive when compared to the 2GB found by Auslogics and 6GB by WebMinds. When we manually pointed the program to our photos folder it found 750MB of duplicates.

Duplicate Finder includes several useful features. You can fine-tune your scan to look for files with customised name similarity, the same file size, date or extension, For music, you can bore into your files to find ID3 title, artist and album similarities. You can set up filters and exclude whole folders, and even mark folders as important so you don't delete files anything by accident.

Images and music files include a preview of duplicates side by side, helping you decide which one to delete.

Verdict

Ashisoft Duplicate Finder is an easy-to-use program for finding duplicate files on your hard drive, but it struggles to thoroughly scan sub-folders. Mara Lancet

\$30 (£19) = ashisoft.com = tinyurl.com/bxzs5gd System requirements Windows 2000/XP/ Vista/7/8



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■ tinyurl.com/b562xw3

Specification

4-bay NAS drive; DSM 4.1; 1,067MHz Freescale P1022 dual-core RISC processor; hardware encryption; 1GB DDR3 RAM; 1x gigabit ethernet: 2x USB 3.0: 1x USB 2.0; 1x eSATA; 2x 92mm fans: external power supply: 165x203x233mm; 2.03kg (without discs)



NAS DRIVE

Synology DiskStation DS413

Synology's DS413 is a four-bay NAS that steps up from the entry-level DS413j, yet has most of the features of the similar-looking and more powerful DS412+ at a lower cost.

Rather than an ARM processor, which is cheaper and runs cooler than a low-power Intel Atom, Synology has specified a Freescale RISC processor. These chips demand less cooling and improve on electrical economy - key for an always-on product.

The drawback is a reduction in file-serving horsepower, particularly in write performance. The gap in performance is closing, though.

Features

Like the DS412+, the DS413 has a pull-off front plate that neatly covers the open disk bays. Also upfront is one USB 2.0 for transferring data or adding storage; but expansion is best handled by two fast USB 3.0 ports at the back, or a single eSATA.

There's a useful 1GB of memory. network connection is via a single gigabit port, and cooling is courtesy of two quiet 92mm fans.

Although the almost entirely plastic chassis doesn't have the quality feel of its QNAP rivals, for example, it contains noise well.

Synology's DiskStation Manager 4.1 software is a rich-and-powerful environment. It's bright and cartoony, and offers a refreshing change from the norm.

As well as serving files over standard PC protocols, such as SMB/CIFS, AFP and NFS, you can run FTP, iTunes and print servers, and start UPnP media streaming.





Synology offers a host of apps in the Package Center. You'll find apps such as Time Backup for Time Machine synching, Download Station for BitTorrent downloads, Cloud Station for cross-platform file synchronisation, and Surveillance Station for IP camera recording.

We found the Download Station could not only handle downloads in the background, with timed schedules, but allow you to search for torrent files within the app itself.

Cloud Station may prove indispensable, allowing you to automatically sync with a folder on the NAS up to two directories on multiple Windows or Mac PCs. This occurs over encrypted SSL for peace of mind. However, single files are restricted to 5GB, and you can't copy system files or applications. Worse, if you move a file from one sub-folder to another within the synched directory, Cloud Station considers it a new file and creates a copy, resulting in needless extra network traffic.

Surveillance Station wants to be a one-stop network video recorder for recording footage from your IP security cameras. Up to 16 cameras from a range of popular brands can be monitored. Synology licenses its software to let you view only one camera feed, though; to see more you'll have to buy more licences, which cost around £45 for one camera, and £170 for four.

We successfully configured the Synology DS413 to monitor and record the feed of an offsite Y-cam camera. Ironically, for a security camera, you must install Java, which is one of the least secure plug-ins for the modern PC.

Performance

The DS413 is faster than the average consumer NAS drive. Using four 3TB WD Red hard disks optimised for network storage, our best results in the lab were recorded using ATTO Benchmark. We saw sequential reads up to 115MB per second (MBps), and writes up to 91MBps.

More realistic figures were recorded using QuickBench over AFP, where read speeds for large files again nudged the gigabit ethernet limit (to 112MBps), while write speeds hit a maximum of 63MBps with 100MB-size data.

Our power-consumption test was thwarted by an issue with busy Windows networks that prevents the NAS going into a deep-sleep System Hibernation state. As a temporary fix, disabling System Hlbernation allowed the disks to spin down.

In full hibernate mode (network cable out) it consumed just 3W, an admirably low draw. We measured 13W with the hard disks static and processor alive. Idle consumption with the disks spinning was 25W.

Under benchmark test load, the DS413 with four WD Red disks consumed just 28W.

Verdict

The DS413 sits comfortably between the entry-level DS413j and lauded DS412+. A novel RISC processor provides more performance than faster-clocked ARM-powered NAS drives at the same price, and low power consumption makes this a wise economical choice. With its comprehensive, approachable interface and decent performance, the DS413 deserves recommendation.

Andrew Harrison

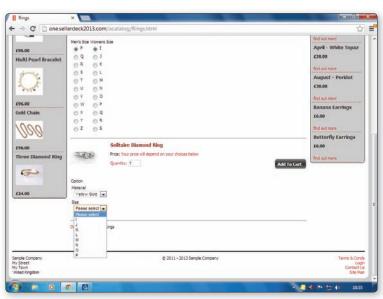
2899 ex VAT £1,079 inc VAT (1 PC) tinyurl.com/b66d5rn **Specification**

Windows XP/Vista/7; 2GB RAM; 120MB drive space



OPTION SELECTORS INTERRELATE:

choosing 'Yellow gold' shows the available ring sizes in that colour only



E-COMMERCE SITE MANAGER

SellerDeck Business 2013

Running an online shop is more complicated than maintaining a simple website, and most software designed to allow you to do so is provided as an online service.

SellerDeck (formerly Actinic) takes a different approach. This desktop application allows you to create and manage a shop on your own PC. The site itself can be locally hosted, or with a hosting service of your choice.

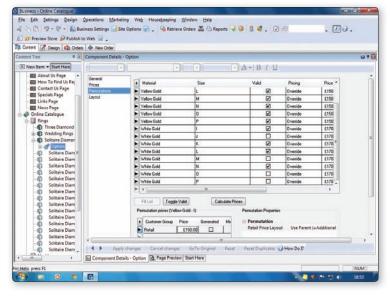
Several versions of the software are available, starting with the simplest Catalog version and moving up to a fully featured Enterprise edition. The Business version sits above Catalog and can handle offline (phone and mail order) sales as well as e-commerce.

You get only a single-user licence for your £899 (ex VAT) investment, although it's possible to run SellerDeck on two machines when one is used to maintain the site (upload) and the other for order processing (download).

Features

The SellerDeck screen is busy, and no attempt has been made to simplify the layout. There are four distinct work areas, which are accessible through tabs above the main control pane. These are headed Content, Design, Orders and New order.

Content display a tree navigation structure in the left pane, offering icons for each page on your site and any items you're selling. Information related to the selected icon is



displayed in a panel to the right. This information is categorised, but there's a steep learning curve to climb before detailed changes become second nature.

The Design tab shows a page from the site - again selected from a content tree, although here it appears on the right. You can select from 12 templates and 22 colour schemes to set up the basic design for your site. Each has a rather anodyne look, and you may want to pep up the design.

Alterations are made in a similar way to a desktop publisher, or by editing the underlying HTML; the screen can be split to show both.

The Orders tab shows both your current and historical order information, and you can pull up customer data, including online

> fraud checks. These checks are performed by DataCash, part of Mastercard, if you also purchase SellerDeck Payments.

The New order tab shows an order panel similar to a typical online order screen for entering phone and mail orders. This familiar approach means entering in real time a new order while dealing with a customer on the phone should be straightforward.

The software links with Dreamweaver for design, and Sage Accounts for financial analysis and bookkeeping, but can be used on its own if you don't need that level of detailed control.

New features for the 2013 version are concentrated on improving the experience for your customers, rather than upgrading the back-office database. Improvements to search and filtering offer suggestions as customers enter keywords and make it possible for the seller to create new pages from filter results alone.

Option selectors on shop pages can now interrelate; for example, different options in a product size selector can alter those offered in the corresponding colour selector.

Prices can also be altered in real time as a customer makes their selections. Lists of items can be paginated, too, removing the need to scroll down through products in a heavily populated category.

Verdict

SellerDeck Business 2013 is a thorough and flexible e-commerce tool for maintaining an online shop. It covers many needs of a small- to medium-size business, and can handle phone, postal and online orders. The new features, while not earth-shattering, help to provide the kind of environment online shoppers now expect. If the single-PC licence proves restricting, a 10-PC Business Plus package is available for £1,399 ex VAT. Simon Williams

£338 ex VAT £406 inc VAT

Contact

■ fujitsu.co.uk

Read mo

■ tinyurl.com/az8b3re

Specification

Colour sheetfeed scanner; CIS image sensor; GI processor; three-colour LED; 600x1200dpi optical resolution; duplex; 25ppm at 300dpi; 863mm paper scanning; ultrasonic sensor; 50 sheets; USB 3.0; 802.11b/g/n; Apple/Android support; 292x159x168mm; 3kq



SCANNER

Fujitsu ScanSnap ix500

Fujitsu's ScanSnaps have followers of almost messianic fervour. It's not simply that these devices seamlessly turn bundles of paper documents of varying shapes into electronic files for searching at the touch of a button. It's the way they do it, offering reliable features, ease of use and speedy performance.

The previous-generation S1500 was impeccably put together, so it's unsurprising that this ix500 reveals only a subtle improvement rather than a dramatic step forwards. Paper handling remains robust, and we couldn't trip up the feed mechanism. A3 paper can be handled using the carrier sheet, and the ix500 also retains the ability to straighten paper and remove blank pages.

The ix500 hosts a more advanced CPU, and a 25 percent speed boost comes courtesy of a new USB 3.0 interface.

We were able to comfortably churn through 32.6 pages per minute (ppm), a sizeable increase on the 24.9ppm we saw from the S1500. CCD sensors have been replaced by Colour Image Sensor, which is considered to be superior for fine lines, but less good at reproducing colour and ironing wrinkles.

Colour is generally very realistic, if a touch pale. It's never sparkling with sheetfeds; the real key is their ability to reproduce the intricate details of letters, articles and forms. Here, the ix500 performed wonderfully, with even tables of detail rendered in perfect order. We had few problems with scrumpled paper, thanks to the superior loading mechanism.

You can send scans direct to your mobile device using the ScanSnap Connect app. For PC use you'll still need to tether the ScanSnap - we'd prefer to see wireless operation.

The software jewel from Fujitsu has long been a full copy of Adobe Acrobat Standard - half the scanner cost alone. The ability to manipulate and create fully searchable PDF files makes it a great addition. It's Windows only, though.



ABBYY FineReader and Evernote are supported but, since Fujitsu doesn't support Twain/Isis, make sure your choice of program is compatible before buying.

Verdict

ScanSnaps lead the way for sheetfed scanners. There wasn't a great deal wrong with the S1500, but Fujitsu has made the ix500 even more flexible at feeding paper, and added a dollop of speed and improved detail. Robin Morris

£124 ex VAT **£149** inc VAT

Contac

■ irislink cor

Read more

tinyurl.com/adwqk4z

Specification

Compatible with Windows XP or later; Mac OS X 10.5 Leopard or later; iPad, requires iOS 4.1 or later



DIGITAL PEN

IRISNotes Executive 2

The IRISNotes Executive 2 converts handwritten text to a digital format that can be edited on Windows or Mac, or using an iPad, iPhone or iPod touch. Aimed at business users, it could also appeal to students and creative types.

The package comprises a digital pen with traditional ink, a receiver (which sits at the top of your writing area) and a USB cable for connecting it to your PC or iOS device (the latter via a USB adaptor).

The pen has a nicely weighted, quality feel, and comes with a small pouch for taking it on your travels.

The process of writing and drawing is simple, and aided by the fact you don't need to use specialist ink, paper stock or rigid, uniformed way of making your mark.

IRIS estimates you can store up to 100 A4 pages on the device, which is then hooked up to the PC or iOS device for conversion.

IRISNotes HD is a free iOS app that aids the conversion process for your desired word processor.



IRIS' OCR software did a fair job of converting our notes into text, which didn't require much further editing. It isn't perfect but, provided you don't have the spidery scrawl of a doctor, you may be pleasantly surprised by the system's accuracy.

The idea of sending your handwritten notes to a special receiver feels a little antiquated and a touch fiddly. It's also worth noting that lefties will need to move the receiver into a position that isn't blocked by the bulk of their hand, which will require trial and error.

The IRISNotes 2 digital pen is offered in two configurations - Express 2, at around £99, and Executive 2, at around £149.

The latter is required to support Apple's iOS devices and Mac computers, and also offers a range of extras that can make this version better value for money.

Verdict

IRIS faces solid competition from Livescribe, Wacom and others in the move to a paperless (or digitised, rather) world. The IRISNotes Executive 2 is a worthy addition, and works simply and effectively - provided that you make the effort to regularly use it. Support for Windows, Mac and iPad adds versatility to a package that has uses beyond the business world.



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Budget laptops

Cliff Joseph reviews six laptops that cost less than £600, yet can handle just about any computing task you might want to throw at them

ith PC sales slowing in recent years, manufacturers have been promoting pricey thin-and-light ultraportables to prop up their profit margins. Truth is, the best-selling laptops remain 15.6in models that cost less than £600.

There's plenty of choice in the low-cost category, and it can be difficult to sort the true bargains from the cheap tat. As always, our advice is to buy the best specification you can find within your budget - you might just regret saving £100 now if your laptop's screen is of such a low quality that it hurts your eyes, or the processor is so underpowered that you're left twiddling your thumbs as it launches the apps you need.

The key specifications are the processor, memory and storage capacity. And since you'll be spending a lot of time staring at the screen, and can't easily swap it out for a better one, the display quality is also important.

Don't look purely at the processor's clock speed. Turbo Boost, which is built into Intel's Core i5 chip, offers a noticeable performance bump by ramping up the clock speed when more power is required. Core i5 processors offer your laptop a degree of future-proofing, allowing it to still feel quick in a couple of years' time. However, the cheapest laptops are likely to pack older Intel Celeron on AMD chips that operate at a fixed speed. If you're on a budget then these are adequate for your daily computing needs, just don't expect them to be up to much when it comes to video editing and gaming.

Memory and storage are relatively inexpensive, so even the cheapest laptop should offer 4GB of RAM and a 500GB hard disk. This is enough to run most common Windows software, such as Internet Explorer and Microsoft Office, and to store a vast collection of music, photos and videos.

Don't overlook the screen, keyboard or touchpad. You can't judge their quality from the spec sheet, so it's important to read reviews. We'll tell you, for example, whether a screen is bright and clear, and if its viewing angles are wide or narrow.



Battery life should also be considered. Manufacturers' claims for battery life tend to be rather optimistic. Expect a budget laptop to last for between three and six hours before needing a recharge. If you're buying a laptop as your main computer for home use, battery life is perhaps a less important consideration than making sure you get the best hardware for your money.







ACER ASPIRE V5-571P TOUCH

£549 inc VAT • acer.co.uk • tinyurl.com/c7LLu7p

There aren't many laptops that cost less than £600 and include a touchscreen. It's no surprise to see Acer pushing down prices, so if you want to take advantage of Windows 8's touch-optimised interface then the Aspire V5-571P Touch is an obvious choice.

In fact, there are even cheaper models than this in the range, including the £480 NX.M49EK.001, which has a Core i3 processor.

The V5-571P is slim for a model with a 15.6in screen, measuring 24.5mm thick. It's easy enough to slip it into a backpack or briefcase, but the Acer is reasonably heavy at almost 2.5kg.

The casing is plastic, but sturdily built, with a smart silver finish and a firm, but slightly flexible, panel protecting the screen. The keyboard and trackpad are both comfortably roomy, although the small cluster of cursor keys can be rather fiddly.

There's a separate number pad, but we don't like the combined # and Enter key, nor the left Shift key, which is combined with the \ key.

The 1366x768 display is bright, clear and supports 10 touch points. It also tilts back to make swiping more comfortable, and responds smoothly and quickly when navigating Windows 8. It's not an IPS panel, which is no surprise at this price, but means viewing angles are poor. This is evident from the solid green background, which appears to graduate into purple toward the top of the screen.

The speakers are a let-down, sounding rather thin and tinny. There's also an odd combined ethernet/VGA port, but a bundled adaptor lets you simultaneously use both ports if necessary.

Core specifications include a 1.7GHz dual-core i5 processor, 6GB of RAM and a 500GB hard disk. That's respectable for the price (given the touchscreen), and we recorded 2,544 points in PCMark 7.

The Acer can even handle a spot of casual gaming, and we were able to get 30fps out of the V5-571P when running Stalker at 1280x720 resolution with Low graphics settings.

Battery life is disappointing, though. The removable battery managed only 3 hours 20 minutes when streaming video from BBC iPlayer over Wi-Fi. That's not disastrous, but even cheaper rivals (admittedly without touchscreens) last longer.

VERDICT: The touchscreen pushes up the price, but the V5-571P Touch is well built and provides respectable performance. Its weaknesses are narrow viewing angles and paltry battery life.

ASUS X501A

£339 inc VAT • uk.asus.com • tinyurl.com/b7yohcj

The Asus' X501A is very much aimed at those on a tight budget, with this Core i3-based version available for £339. This is a modern dual-core processor, running at a respectable 2.2GHz, and it's paired with 4GB of memory and a small 320GB hard drive.

The Core i3 can't overclock like pricier Core i5 chips, and it produced a rather low score of 1,389 points in PCMark 7. The lack of pace is most noticeable when the laptop is first starting up the X501A seems to pause and gather its thoughts for about 10to 15 seconds even after the main Start screen has appeared.

The X501A is otherwise responsive, and more than up to the job of browsing the web or running productivity apps. It's no gaming rig, though, and managed just 10fps in Stalker at 720p, Low detail.

We're not complaining at this price and, in other respects, the X501A is impressive. It's very well built, for example: the casing has an attractive half-tone effect, and it feels sturdy.

The 1366x768-pixel screen isn't the brightest we've seen, but it's fine for browsing the web or watching online video. Colours are vibrant and accurate enough for editing your snaps. The viewing angles aren't great, and the glossy screen makes it hard to avoid reflections, but it's surprisingly good for the price.

Build quality is better than you might expect, and the overall sturdiness of the unit ensures that the keyboard and trackpad feel firm and comfortable in use. The trackpad is flush with the casing, allowing the use of gesture-based navigation in Windows 8.

The Altec Lansing speakers are a pleasant surprise, and lack the harsh, tinny edge we've come to expect from low-cost laptops.

You also get a USB 3.0 port, plus HDMI and VGA outputs. There's no optical drive, so you might need to budget a little extra for an external drive if you want to watch DVDs, rip CDs or simply install some software.

On the plus side, the Asus weighs a portable 2.1kg, which is well below average for a 15.6in laptop. It's no ultraportable, but the X501A can easily be carried around. With a battery that provides a good 4.5 hours of video streaming over Wi-Fi, it's a real bargain.

VERDICT: Asus gets all the basics right with the X501A, providing a sturdy, portable laptop with good battery life. It offers good value if you just need a basic laptop for undemanding tasks.







£499 inc VAT • dell.co.uk • tinyurl.com/bedjg3f

It's hard to find fault with this recently updated version of Dell's Inspiron 15R. It's competitively priced, smart and well built, and provides good all-round performance and battery life.

Available in several different colours, including pink, red, silver and a rather fetching metallic blue, the Inspiron 15R-5521 certainly doesn't look like a budget laptop. It doesn't feel like one either - the case is plastic, but solidly built, with a large trackpad and a firm, comfortable keyboard. It'll be a good choice if you need to type up a long report or do a bit of number-crunching in Microsoft Excel.

The 15.6in, 1366x768-pixel screen is bright and clear, and we can't complain about a lack of a full-HD screen at this price.

The speakers sound a bit thin, with very little bass, but that's a minor criticism in an otherwise well-constructed laptop. It's a little hefty at 2.3kg, but just about portable enough to carry in a bag.

There are cheaper versions of the 15R, with prices starting at $\pounds 399$ for a model with an i3 processor. This model has the same chassis, screen and keyboard, but is fitted with a dual-core i5 running at 1.7GHz (2.6GHz Turbo Boost), 8GB of RAM and a 1TB hard drive.

This combination scored 2,834 in PCMark 7. The 15R-5521 will take web browsing and office work in its stride, and the extra memory and storage space makes it a decent choice for more demanding tasks such as video-editing, too.

The Dell can even handle a spot of casual gaming - provided you're not too fussed about having all the latest graphical eye-candy. Running Stalker at 1366x768 with detail set to High we recorded a framerate of 23fps; dropping the resolution to 1280x720 and using Low detail the Inspiron managed a playable 35fps.

Battery life is better than expected. The 65Wh battery pack managed an impressive 6 hours streaming video from BBC iPlayer over Wi-Fi. You should get a close to a full day if you're simply running Microsoft Office (not included).

Dell picks up some extra kudos for its warranty, which includes 'in-home' repair cover.

VERDICT: Dell hardly puts a foot wrong with the Inspiron 15R-5521. This well-built laptop offers good performance and an attractive screen. Battery life is a particular strength, ensuring that the Dell will earn its keep for both work and play.



LENOVO G580

£399 inc VAT • saveonlaptops.co.uk • tinyurl.com/a786dey

Lenovo seems set on taking HP's crown as the world's top-selling PC manufacturer, and it's going about it the right way with a range of excellent-value products, including this G580 laptop.

The G580 is an update to the popular G570, ditching the brushed-metal effect keyboard surround for pearlescent glossy black. The touchpad is now part of the surround, delineated by small raised dots. It's too easy to wander off the edge and accidentally 'swipe' back in, bringing up the Charms bar when you intended to scroll across a page. This results in one of the most frustrating Windows 8 control systems we've used.

The 15.6in screen has a typical but low 1366x768-pixel resolution, but it's bright and clear, with typically narrow viewing angles for a non-IPS screen. The screen coating is very glossy and reflective, which can be annoying when used with bright overhead lighting.

The 'AccuType' keyboard is well designed, with molded keys that stand high and provide plenty of travel as you type. The Lenovo G580 will be a good choice for those who do a lot of typing for school or office work.

This G580 has a dual-core Intel Core i3 processor, along with 6GB of memory and a 1TB hard disk, which is a decent specification at this price. The i3 doesn't feature Turbo Boost, but its 2.4GHz clock speed is respectable and delivered a solid score of 2,614 in PCMark 7.

That level of performance will be fine for most day-to-day computing tasks, and the G580's integrated Intel HD 4000 graphics can also stretch to a spot of casual gaming from time to time. It managed a passable 24fps when running Stalker at maximum resolution and High graphics settings; dropping to 1280x720 and Low graphics quality pushed that right up to 37fps.

Battery life is good, but not great. We recorded 4 hours when streaming iPlayer video over Wi-Fi; you can expect longer if you disable Wi-Fi, but similarly priced rivals last longer.

The G580 is a rather weighty laptop, at 2.4kg, so it's better suited to use at home or in the office than a life on the road.

VERDICT: If you have a limited budget, but don't want to stoop as low in the performance stakes as the Toshiba L850D, the G580 offers a good compromise and also has a 1TB hard drive. Its touchpad is annoying but, in most other respects, it's a capable workhorse.





PACKARD BELL EASYNOTE TE11HC

£369 inc VAT • tesco.com • tinyurl.com/aL6dLaa

Packard Bell is selling this particular version of its EasyNote TE laptop through Tesco stores. It's a neatly designed 15.6in laptop, with a glossy black case and silver trim. The build quality is reassuring, so we wouldn't have any worries about carrying it around in a bag - except that it weighs 2.4kg and measures a chunky 36mm when closed.

The Packard Bell's 1366x768-pixel screen is bright and sharp, and perfectly adequate for watching video or browsing your photo collection. The glossy coating can be annoying when you see your own face staring back at you, though.

The speakers are rather feeble, even by laptop standards, producing little volume and poor bass. The touchpad is also on the small side and, although the keyboard is large and comfortable to use, the space bar rattles when you're typing quickly.

This model is one of the cheapest in the EasyNote TE range, yet it has a healthy 8GB of memory, plus a 750GB hard disk that provides plenty of room for storing music, photos and video.

The weak link in the chain is the 1.7GHz dual-core Intel Celeron processor. This produced a modest score of 1,852 points in PCMark 7. That's plenty of power to edit documents and browse the web, but more demanding tasks will prove something of a struggle.

The Celeron lacks the Intel HD 4000 graphics used by current Ivy Bridge processors. Even at 1280x720 with Low graphics settings, Stalker ran at around 15fps (jerky and unplayable).

We don't want to be too harsh on the EasyNote TE, since it's a perfectly functional laptop for basic computing work. However, compared to the Lenovo G580, for example, which costs only an extra £30, the TE11HC doesn't offer great value.

The EasyNote lacks the Lenovo's USB 3.0 ports, Bluetooth radio and its faster processor and graphics chip. The Packard Bell might have 2GB more RAM than the G580, but this is an unnecessary expense and doesn't boost performance.

Battery life is relatively modest, and we recorded just over 3.5 hours when streaming video over Wi-Fi. With Wi-Fi disabled, you should be able to get even longer away from the mains.

VERDICT: It might seem to offer good value, but the EasyNote is outshone by the Lenovo G580. If budget is your main concern, try the Toshiba Satellite L850D for around £30 less.

TOSHIBA SATELLITE L850D

£340 inc VAT • toshiba.co.uk • tinyurl.com/axnxbb4

Toshiba's Satellite L850D is designed to provide good multimedia features at a low price. It works well as an entertainment system, providing an attractive screen and respectable sound quality.

The L850D is also well built. This 15.6in laptop is available in either white or cherry red. There's a large, smooth, responsive trackpad, and a firm keyboard that makes typing at speed feel comfortable.

It's relatively heavy, though, at just over 2.3kg, and measures a chunky 33.5mm thick. You might want to look elsewhere if you need something to carry around every day.

Toshiba often finds usable budget screens for its laptops, and the 1366x768-pixel display of the L850D is bright and clear, with a wide horizontal viewing angle that means you can watch videos with at least one other person, or run a photo slideshow. The glossy coating causes annoying reflections, though.

The Toshiba's built-in speakers aren't as tinny as many laptop speakers we've heard, so you can listen to some music without scrambling to find your headphones.

An Intel-based version of this laptop (the L850) costs £430 with a 2.5GHz Core i3 processor, while this L850D takes the significantly cheaper AMD route. The dual-core AMD E2-1800 processor runs at 1.7GHz and is backed up by 6GB of RAM and a 750GB hard disk.

The E2-1800 is no speed demon. The L850D takes about 25 seconds to boot to the Windows 8 Start screen, but then drags its feet for another 20- to 25 seconds before hitting its stride and allowing you to get on with some work. Its score of 1,265 points in PCMark 7 is one of the lowest we've seen.

Even so, the L850D will be adequate for basic web browsing and running productivity apps, and you'll get a reasonable runtime from the battery. We measured just under 4 hours of streaming video.

Video playback is ably handled by the integrated Radeon HD 7340, but its 3D gaming performance is modest. It managed 17fps when running Stalker at 1280x720 and Low graphics settings.

VERDICT: If you're looking for an affordable laptop designed with entertainment in mind, the attractive screen and audio features of the Toshiba Satellite L850D will appeal. It's well-specified, except for the processor, so don't expect great performance in the most demanding applications.



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Conclusion

We were pleasantly surprised by the laptops in this round-up, which prove that you can get a great-value laptop for well under £500.

Manufacturers tend to use the same chassis, screen and keyboard for entire laptop ranges, which means you can usually save hundreds of pounds on what looks like a top-of-the-range laptop, but with a much slower processor, smaller-capacity hard disk and less memory.

The Toshiba L850D is a case in point. It's attractive (if you like the colour) and well built, offering a real bargain at £340. Its AMD processor is relatively slow, but the Satellite will still cope with daily tasks such as web browsing, editing photos and working on documents, and it handles Windows 8 apps without any problems.

The Toshiba Satellite L850D has a good keyboard and a touchpad with physical buttons. It also has plenty of connections, including a

pair of USB 3.0 ports. The USB 2.0 port can charge USB devices even when the laptop is turned off.

If your budget will stretch to £400 then Lenovo's G580 offers good value. Its Core i3 processor is quicker, and also has more powerful integrated graphics. The touchpad is frustrating, though.

If you can afford another £100, Dell's Inspiron 15R-5521 is a perennial good buy. The 15R name has been around for years, but the actual laptops are constantly updated with a new chassis, the latest components and ports. The model on test here has a fast Core i5 processor, lots of memory and a large hard disk.

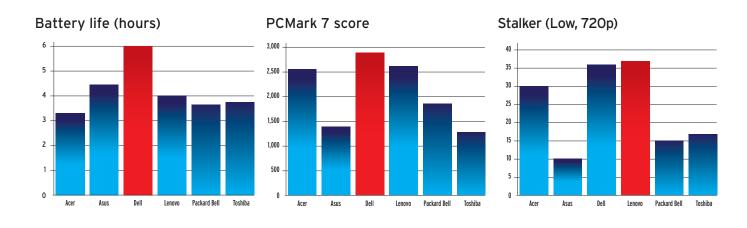
The Dell's warranty allows certain repairs to be carried out onsite, too. This means you won't find yourself without a laptop and unable to work should something go wrong. oximes

	ACER £549 inc VAT	ASUS £339 inc VAT	DELL £499 inc VAT PC ADVISOR BEST BUY
Model	Aspire V5-571P Touch	X501A	Inspiron 15R
Product code	NX.M49EK.002	XX402H	5521
Processor	1.7GHz Intel Core i5-3317U (dual-core, 2.6GHz Turbo)	2.2GHz Intel Core i3-2328M (dual-core)	1.7GHz Intel Core i5-3317U (dual-core, 2.6GHz Turbo)
Operating system	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit
Memory	6GB 1,600MHz DDR3	4GB 1,600MHz DDR3	8GB 1,600MHz DDR3
Storage	500GB, 5,400rpm HDD	320GB, 5,400rpm HDD	1TB, 5,400rpm HDD
Display	15.6in (1366x768) gloss touchscreen	15.6in (1366x768) gloss LCD	15.6in (1366x768) gloss LCD
Graphics	Intel HD Graphics 4000	Intel HD Graphics 3000	Intel HD Graphics 4000
Connectivity	Gigabit ethernet, 802.11a/b/g/n, Bluetooth 4.0	Gigabit ethernet, 802.11b/g/n	Gigabit ethernet, 802.11b/g/n, Bluetooth 4.0
Ports	1x USB 3.0, 2x USB 2.0, HDMI, VGA, mic, headphone jack, Kensington lock slot	1x USB 3.0, 1x USB 2.0, HDMI, VGA, mic, headphone jack, Kensington lock slot	2x USB 3.0, 2x USB 2.0, HDMI, mic, headphone jack, Kensington lock slot
Card slot	SD/SDHC	SD/SDHC	SD/SDHC/SDXC/MS
Optical drive	8X DVD±RW	N/A	8x DVD±RW
Speakers	Stereo speakers	Altec Lansing stereo speakers	Stereo speakers
Webcam	0.9Mp	0.3Mp	0.9Mp
Trackpad	105x75mm, two-button	103x60mm, two-button	100x55mm, two-button
Other software	None	McAfee Security (15 months)	None
Battery	37Wh lithium-ion, removable	47Wh lithium-ion, removable	65Wh lithium-ion, removable
Battery life	3 hrs 20 mins (200 mins)	4 hrs 35 mins (275 mins)	6 hrs (360 mins)
Dimensions (WxDxH)	382x253x24.5mm	380x253x35mm	376x259x31.3mm
Weight	2.45kg	2.1kg	2.3kg
Warranty	1-year return-to-base	1-year return-to-base	1-year in-home
PCMark 7 score	2,544	1,389	2,834
Stalker (Low/High) ¹	30/22fps	10/17fps	36/23fps

¹Framerates measured at 1280x720, DirectX 9, Low quality and 1366x768, DirectX 11, High quality respectively







LENOVO £399 inc VAT	PACKARD BELL £369 inc VAT	TOSHIBA £340 inc VAT
***	***	RECOMMENDED
G580	EasyNote TE11HC	Satellite L850D-12Q
MAAQ9UK	NX.C1FEK.003	PSKGAE-003001EN
2.4GHz Intel Core i3-3110M (dual-core)	1.7GHz Intel Celeron B820 (dual-core)	1.7GHz AMD E2-1800 (dual-core)
Windows 8 64bit	Windows 8 64bit	Windows 8 64bit
6GB 1,600MHz DDR3	8GB 1,333MHz DDR3	6GB 1,333MHz DDR3
1TB, 5,400rpm HDD	750GB, 5,400rpm HDD	750GB, 5,400rpm HDD
15.6in (1366x768) gloss LCD	15.6in (1366x768) gloss LCD	15.6in (1366x768) gloss LCD
Intel HD Graphics 4000	Intel HD Graphics	AMD Radeon HD 7340
10/100 ethernet, 802.11b/g/n, Bluetooth 4.0	Gigabit ethernet, 802.11b/g/n	10/100 ethernet, 802.11b/g/n. Bluetooth 4.0
2x USB 3.0, 1x USB 2.0, HDMI, VGA, mic, headphone jack, Kensington lock slot	3x USB 2.0, HDMI, VGA, mic, headphone jack, Kensington lock slot	2x USB 3.0, 1x USB 2.0, HDMI, VGA, mic, headphone jack, Kensington lock slot
SD/SDHC	SD/SDHC/MS	SD/SDHC/SDXC
8x DVD±RW	8x DVD±RW	8x DVD±RW
Stereo speakers	Stereo speakers	Stereo speakers
0.9Mp	0.9Mp	1Mp
100x50mm, two-button	85x45mm, two-button	95x55mm, two button
None	None	Nero 12 Essentials
48Wh lithium-ion, removable	48Wh lithium-ion, removable	48Wh lithium-ion, removable
4 hrs (240 mins)	3 hrs 40 mins (220 mins)	3 hrs 45 mins (225 mins)
375x240x36mm	381x253x36mm	380x242x33.5mm
2.4kg	2.4kg	2.35kg
1-year return-to-base	1-year return-to-base	1-year return-to-base
2,614	1,852	1,265
37/24fps	15/8fps	17/13fps





We tested security suites on PCs, tablets and smartphones to evaluate how well they protect against viruses and other threats

Contributors: Nick Mediati and Sarah Jacobsson Purewal; illustration by Asaf Hanuka

f you're like a lot of people, when it comes time to renew your security software, you may ask yourself, "Do I really need to upgrade to the latest version?" Keeping up-to-date is generally a good idea, though, since new threats surface constantly. And if you value mobile security or use a social-networking site, this year's crop of security suites is worth paying attention to.

An increasing number of security suites now feature special tools to help protect you on social networks – a growing target for spammers, scammers and other parties who want to get at your personal information. For example, Trend Micro's Titanium Internet Security suite comes with a handy tool that highlights any possible areas of concern involving your Facebook privacy settings. Various suites also include tools that will scan links so that you aren't duped into clicking a malicious link hidden behind a URL shortener.

If you own a smartphone or tablet, or both, the security class of 2013 has some new tools for you. And some security packages come with a mobile app that provides protection against mobile malware or includes other features such as GPS tracking to help you find your phone should it go missing. These apps often also

include remote-wipe capabilities that let you delete the contents of a missing phone or tablet so your private data doesn't end up falling into the wrong hands.

In addition, Windows 8 has changed the way security software makers design their programs. Many of the suites we looked at this year have redesigned interfaces that include larger buttons and controls in an effort to be more touch-friendly.

We teamed up with AV-Test, a respected antivirus testing lab based in Germany. AV-Test ran each suite through a comprehensive battery of tests to find out how well each would stand up to the worst malware currently in existence. AV-Test also performed speed testing to determine whether the suites will slow your PC to a crawl. We analysed the data that AV-Test provided, and then tried each of the products to help you decide which suite to go for. We explain our testing methodology at tinyurl.com/at26vzr.

Note: beside the top five suites discussed here, we tested four others that ranked a cut below. These are, in order, McAfee Internet Security 2013, G Data InternetSecurity 2013, AVG Internet Security 2013, and Avira Internet Security 2013. For reviews of all suites, visit pcadvisor.co.uk/advisor/security.

F-Secure Internet Security 2013

BEST BUY

PC ADVISOR F-Secure Internet Security 2013 (£39 for one year and

three PCs) came in first in several of our malware-detection, -blocking and -removal tests. It successfully blocked attacks, detected and disabled infections, and proved adept at cleaning up all traces of malware.

In our real-world attack test, F-Secure completely blocked 100 percent of attacks. This test indicates how well the product might successfully block new malware attacks as it encounters them in the wild. But F-Secure wasn't unique: of the nine security suites we tested, four others also managed to completely block all attacks: Bitdefender, G Data, Norton and Trend Micro.

F-Secure also put up great scores in our malware-zoo detection test: the suite detected 99 percent of known malware samples. This score puts it in the top five of the security suites we tested, although it's at the bottom of that group (G Data, McAfee, Norton and Trend Micro all posted detection rates of 99.7 percent or higher). F-Secure flagged just two safe files (out of more than 250,000) as malicious, which is a good false-positive rate overall. However, since



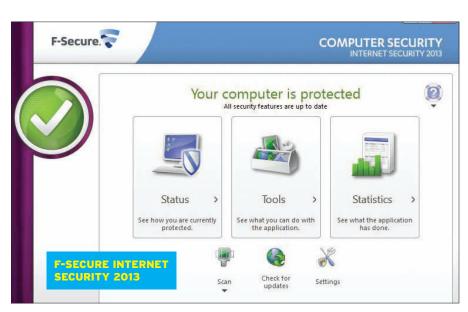
BEST OVERALL F-Secure Internet Security 2013

F-Secure's 2013 suite kept our test system free of malware and did a great job of cleaning up infections that made it on to our PC. It's speedy and well-designed, too.

four of the suites achieved a perfect score in false-positive testing, and two suites flagged only one safe file as malicious, on this measure F-Secure still ends up in the bottom half of the list.

In our system cleanup test, F-Secure performed very well. In fact, it's at the top of the list (alongside Bitdefender) after detecting and disabling all infections on our test computer and completely removing 90 percent of infections. So F-Secure should effectively dispatch any malware it finds on your machine.

While F-Secure does an excellent job of detecting, disabling, blocking and cleaning up malware, all this power comes at a price: F-Secure added six seconds to our startup time (compared to a system with no antivirus software installed) - the worst showing of all of the suites we tested. It also added five seconds to shutdown time. F-Secure performed well in the rest of our PC speed



tests overall, but it significantly slowed application installation.

Scanning speeds were much better, though. F-Secure took second place in both on-demand (manual) scan tests (1 minute, 16 seconds) and on-access (automatic) scans (3 mins, 50 secs). Both results are by a healthy margin better than average.

> The suite installs quickly and easily, with just four screens to click through and no restart required. It doesn't install any extras (such as a toolbar), nor does it change any of your default settings. It does install a launcher, which is what you open when you double-click the program's system tray icon. The

launcher has three buttons to take you to different program screens: a computersecurity screen, an online-safety screen, and a third for F-Secure's website.

F-Secure's user interface is sleek and easy to understand. It presents a large round checkmark (or X mark) that shows your protection status, as well as three modules for checking your security status, F-Secure's extra tools and features, and statistics and reports. Below these modules is a scan button, an update button and a settings button. The settings are fairly easy to get around, and each screen has a guick explanation of what the feature does and how it works.

With excellent protection and a very user-friendly interface, F-Secure is definitely worth your cash. This security package adds a little extra weight to your system but, if you can get past those performance issues, it's a great program.

Norton Internet Security

RECOMMENDED

Symantec's 2013 edition of Norton Internet Security

(£49 for one year and three PCs) is a solid performer with a polished, touch-optimised user interface. This security suite didn't totally dominate its competitors, but it did completely block, detect and disable all malware in our real-world tests, and it performed well enough overall to snag second place in our round-up.

Norton's excellent showing in our real-world attack test indicates that it should be effective at blocking brand-new malware attacks as it encounters them in the wild. As noted in the F-Secure review, of the security suites we tested, four others were also successful at completely blocking 100 percent of attacks: Bitdefender, F-Secure, G Data and Trend Micro.

Norton produced stellar - although not perfect - results in detecting known malware. In our malware-detection test, it successfully detected 99.8 percent of known malware samples. Norton also put up a perfect score in our false-positive test: it didn't mistakenly identify any safe files, out of more than 250,000, as malicious.

Norton does an acceptable job of cleaning up a system that has been infected, but it missed some infections in our evaluation. It detected and disabled 90 percent of infections, and cleaned up 60 percent of infections. This is a decent, but not fantastic showing - seven of our tested suites detected and disabled 100 percent of infections, and six cleaned up all traces of infection at least 70 percent of the time.

On the other hand, Norton is a relatively lightweight program that won't bog down vour system. It added about half a second to startup time (compared to a PC that had no antivirus program installed), and also added

three seconds to shutdown time; in all our other speed tests, it was faster than average. Norton is faster than average when it comes to scanning speeds, as well. The package required just 1 min, 19 secs to complete an on-demand scan, and 2 mins, 55 secs to complete an on-access scan - both times represent better-than-average results.

Norton's interface is very polished and simple, and the program installs with just one click. The main window has tile-like buttons, which look designed to work well with Windows 8 touch systems. You'll find four tiles on the main screen: a tile that shows your protection status, along with information about your CPU usage; a 'Scan Now' tile; a LiveUpdate tile (which you'd use to install any updates to the suite); and a tile for advanced settings. You can also access the settings via the Settings tab.

The Settings menu is relatively easy to navigate, although it has more options than a beginner will need. Still, Norton does a good job of explaining different features and toggles, and a help button (which takes you to Norton's online support site) is always located next to confusing terms.

The 2013 version of Norton Internet Security is a good one, especially if you're a Windows 8 user.

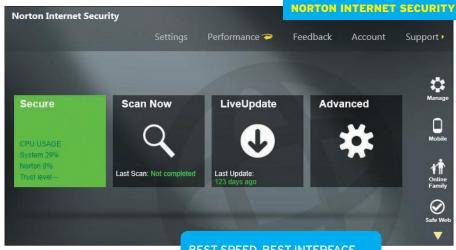
Trend Micro Titanium Internet Security 2013

PC ADVISOR

Trend Micro Titanium Internet RECOMMENDED Security 2013 (£59 for one

year and three PCs) certainly lives up to its name. This 'titanium' security suite didn't let anything get through in our tests. It earned excellent marks in just about every category. It also has a user-friendly interface and a quick installation process.

In our real-world attack tests, which indicate how well an antivirus program will



be able to block new malware attacks as it encounters them in the wild, Trend Micro completely blocked every threat it faced. This means the program should be able to keep you very secure, even when new malware is introduced in the future.

Trend Micro nabbed high marks in most of our other security tests. In our malware-zoo detection test, which exposes the program to a collection of malware that had been introduced in the preceding four months, Trend Micro's package detected 100 percent of known

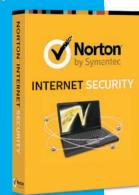
malware samples. In our false-positive test, which checks to see whether a product mistakenly flags a known safe file as being dangerous, it identified just one safe file (out of over 250,000) as malicious.

The suite also did very well in our cleanup test: it detected and disabled 100 percent of infections, and it managed to fully purge the system of 80 percent of those infections.

BEST SPEED, BEST INTERFACE Norton Internet Security

The days of Norton being ridiculed as slow are long gone: the company's newest suite had lightning-quick scan times, and its impact on overall PC performance was minimal.

We liked Norton's polished, easy-to-use interface and one-click installation process. The package is also designed to be Windows 8-friendly.



This result puts it in second place, tied with G Data and Kaspersky, for total cleanup rate.

Trend Micro Titanium Internet Security 2013 is also a speedy and lightweight program - most of the time. In our performance tests, the program added just 0.3 seconds to startup time (compared to a system that had no antivirus program installed), and three seconds to shutdown time. However, we found that it dragged down file-copy operations more than most of its competition.

The suite's scan times were on the slow side, too, with an on-demand (manual) scan taking 1 min, 50 secs (as compared to the average time of 1 min, 33 secs), and an on-access scan requiring 5 mins, 41 secs (as compared to the average 4 mins, 50 secs).

Installing the Trend Micro package is a breeze - you have just three screens to click through and an optional registration screen (which asks only for your email address). Note, however, that the program does try to install three separate Firefox add-ons: a browser exploit prevention add-on, which blocks malicious code from running; a certificate add-on, which checks the safety of websites, links and wireless network connections; and a toolbar add-on.





BEST PROTECTION

Trend Micro Titanium Internet Security 2013

This suite had the most well-rounded protection of all the suites we looked at. It proved effective both in keeping malware at bay and in cleaning up infected computers.



Trend Micro's user interface is relatively easy to understand, although it's not as polished or attractive as AVG, F-Secure or Norton's. The main window has five tabs along the top: an Overview tab, and others for PC/Mobile, Privacy, Data and Family. The Overview tab shows your protection status, along with some additional stats (such as how many threats have been stopped). This screen also has a scan button, a settings button and a security-report button.

The PC/Mobile tab shows PC- and mobile-related security features, such as the system tuner and the rescue-disk creator, as well as links to get Trend Micro's apps for your Android devices and Mac systems. The Privacy tab deals with social networking, the Data tab covers data security along with Trend Micro's secure erase feature, and the Family tab holds parental controls.

The settings pane, which you can access via the first tab, features basic settings for virus and spyware controls, internet and email controls, and exception lists. You'll also find a button for other settings, such as system startup, network settings, and the background picture for your main window. Trend Micro's settings don't seem to be overly geared toward the advanced user, but the suite could still do a better job of explaining the settings and features found within the program.

Overall, Trend Micro Titanium Internet Security is a great choice. This security suite has excellent performance, a quick installation process, a user-friendly interface and speedy scans. Its settings pane is a tad confusing, but that's a minor issue considering the protection you'll be getting.

Bitdefender Internet Security 2013

Bitdefender Internet Security 2013 (£44 for one year and three PCs) may just be everything that you'd want in a security suite. This program, which earned the highest rating in both our real-world attack test and our system cleanup test, has a user-friendly interface that will appeal to both regular and advanced users. It also comes with several extra services, such as

antitheft protection for various mobile devices.

In our real-world attack test, Bitdefender completely blocked 100 percent of attacks. Bitdefender was also able to detect 98.8 percent of known malware samples in our malware-zoo detection test. That's not

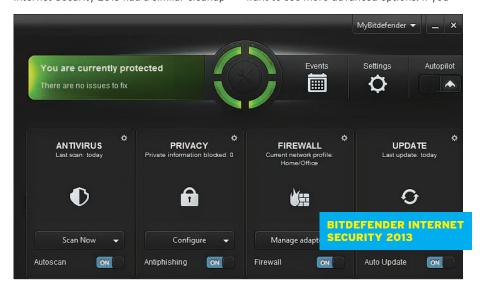
a bad detection rate, but five of the nine security suites in this year's round-up had detection rates of 99 percent or higher.

It managed to detect and disable 100 percent of the infections in our system cleanup test, and it successfully cleaned up all traces of infections 90 percent of the time. This result is the best full-cleanup rate of any of the suites we tested - only F-Secure Internet Security 2013 had a similar cleanup

screen requires you to log into, or create, a Bitdefender account. Bitdefender doesn't come with a browser toolbar, but it does install a widget that sits on your desktop and displays protection status and notifications.

Bitdefender's user interface is attractive and nicely laid out, with a large banner that shows protection status and smaller modules for specific areas of protection. It's easy to find things on the main screen: a big settings button, for example, takes you to a comprehensive list of settings, to a notifications area, and to smaller modules (for antivirus functions, online privacy, the firewall, program updates, and so on) that allow you to quickly access and configure those features.

Settings and options are abundant, but not overwhelming. Bitdefender does a good job of keeping things simple, unless you want to see more-advanced options. If you



rate (90 percent). Bitdefender flagged just one file (out of 250,000-plus) as malicious, which gives it a very low false-positive percentage compared with its competition.

The program adds just a little extra weight to your system, and its slowdowns are tolerable. It added 3.5 seconds to startup time (compared to a PC with no antivirus program installed), which puts it in the lower half of the suites we tested. It also added a second or so to shutdown time. Bitdefender has the longest on-demand scanning time (2 mins, 1 sec) of the programs we tested, and the fourth-longest on-access scanning time (5 mins, 41 secs).

Bitdefender's installation process is a little tedious. It has only six screens to click through, but a couple of those require user input (such as choosing whether to turn on certain features), and the last

do start to get a little confused, you can always click the help button in the bottomright corner of each screen to see pop-up messages that describe what the settings do.

Bitdefender also lets you manage your services, apps and mobile devices from a web portal called MyBitdefender. This portal, which you sign up for when you install the program, lets you configure online parental controls, manage Facebook and Twitter protection, set up antitheft protection for your devices, activate identity theft protection, and access Bitdefender's Safebox cloud backup storage (you get 2GB for free).

Overall, Bitdefender's 2013 Internet security suite is an excellent, user-friendly program. The program does have some slight scanning-speed issues, but otherwise it's an easy-to-use suite that gives you several nice extra services.



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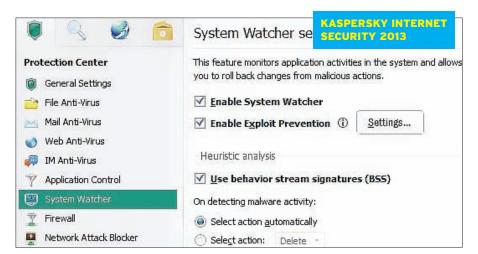


Kaspersky Internet Security 2013

Kaspersky Internet Security 2013 (£49 for one year and three PCs) is a solid antimalware suite that provides admirable protection and an excellent settings interface. This program looks a little different from the other suites we tested, mainly because of its teal-and-white colours, in contrast to the green-is-good/red-is-bad user interface that most other security packages use. It's a good program that will keep you safe from most incoming attacks.

In our real-world attack test, Kaspersky completely blocked 94.4 percent of attacks. Unfortunately, the 5.6 percent of attacks that it failed to block completely were not blocked at all - in other words, our test system got infected 5.6 percent of the time.

Kaspersky's suite was able to detect 98.1 percent of known malware samples in our malware-zoo detection test. This detection rate is okay, but seven of the nine suites we tested had higher rates (98.8 percent or more). Kaspersky did have an excellent false-positive rate, as it didn't flag any safe files as malicious.



In our system cleanup test, the Kaspersky software did an excellent job of detecting, disabling and fully cleaning up infections. It detected and disabled all infections on our test PC, and fully cleaned up all traces of malware 80 percent of the time.

Kaspersky will add a little weight to your system, and it will slow down some operations more than most of its

competitors. In our tests, the program added just over two seconds to startup time, and just over 10 seconds to shutdown time. Those extra seconds make Kaspersky's suite one of the heaviest antimalware programs we tested (it placed seventh in startup time and last in shutdown time). In addition, Kaspersky dragged down the speed of file downloads and copying operations.

	F-SECURE £39 inc VAT (3 PCs, 1 yr)	NORTON £49 inc VAT (3 PCs, 1 yr)	TREND MICRO £59 inc VAT (3 PCs, 1 yr)	BITDEFENDER £44 inc VAT (3 PCs, 1 yr)	
PRODUCT NAME	Internet Security 2013	Internet Security (2013)	Titanium Internet Security 2013	Internet Security 2013	
MALWARE DETECTION	١				
Signature-based	99%	99.8%	100%	98.8%	
Fully blocked real-world malware	100%	100%	100%	100%	
Partially blocked real-world malware	0%	0%	0%	0%	
SUCCESSFUL INFECTI	ON CLEANUP				
Active malware ¹	100%	90%	100%	100%	
Active and inactive malware	90%	60%	80%	90%	
SCAN SPEED					
On-demand (secs) ²	76	79	110	121	
On-access (secs) ²	230	175	341	341	
DESIGN					
Interface	Very good	Superior	Very good	Very good	

Percentages rounded to the nearest 10th. All tests conducted at default settings. 'Cleanup of active malware files. Does not include removal of Registry changes or inert files. ²Time to scan 4.5GB of data; lower is better.



Its manual scan times are better than average, however: the program took first place in on-demand scan time (1 min, 10 secs), and ninth place in on-access scan time (6 mins, 8 secs). Its on-demand scan time is significantly better than the average scan time of 1 min, 33 secs, but its on-access scan time is more than a minute slower than the average scan time of 4 mins, 50 secs.

Kaspersky Internet Security 2013 is quick and painless to install. It has just four screens to click through, and registering your product is as easy as typing in your email address. The program doesn't try to install a toolbar, but it does attempt to install the Kaspersky Anti-Banner Firefox add-on, which appears to be an ad blocker. Installation doesn't require a reboot.

Kaspersky's user interface is simple, straightforward and easy to understand. The main window features a large top banner that shows whether the software is running, with smaller links to important features below: scan, update, Safe Money (a feature designed to keep you secure when you make financial transactions online),

parental control, applications activity, network monitor, quarantine and tools. In the upper-right corner of the main window are buttons for reports and settings.

The settings menu looks a little intimidating at first glance, but it's easy to navigate. It presents four tabs - Protection Center, Scan, Update and Advanced Settings - and each tab has several sub-categories,

which lead to settings screens. Each settings screen has a short description of what the feature does, and all wording is simple and lacking in security jargon.

Kaspersky Internet Security 2013 is a competent antimalware program. We like how it combines advanced settings with simply worded explanations to help all users get the most out of the product. ⊠

Why the other four missed the cut...

The security software market is highly competitive, and it showed in our test results, where no suite detected less than 97.8 percent of recent known malware samples, or blocked less than 94.4 percent of new malware in our real-world attack-blocking tests. False positives were also largely a non-issue. But if you look closely, you can find some differences among the suites.

In particular, we noticed differences in the ease of use of the suites we

tested. While some packages (such as Norton and Trend Micro) were user-friendly and polished, others (such as Avira and G Data) were less so and seemed to be designed with expert users in mind.

In the end, even the lower-ranked suites performed reasonably well, but they didn't stand out enough to claim a higher ranking. Visit pcadvisor.co.uk to see a complete listing of the suites we reviewed for 2013.

KASPERSKY £49 inc VAT (3 PCs, 1 yr)	MCAFEE £54 inc VAT (3 PCs, 1 yr)	G DATA £44 inc VAT (3 PCs, 1 yr)	AVG £49 inc VAT (3 PCs, 1 yr)	AVIRA £51 inc VAT (3 PCs, 1 yr)
Internet Security 2013	Internet Security 2013	InternetSecurity 2013	Internet Security 2013	Internet Security 2013
98.1%	99.9%	99.7%	97.8%	98.8%
94.4%	94.4%	100%	94.4%	94.4%
0%	0%	0%	5.6%	5.6%
100%	100%	100%	90%	100%
80%	70%	80%	60%	50%
70	95	116	108	101
368	300	362	391	266
Very good	Very good	Fair	Very good	Fair



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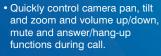


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Business PCs

Paul Monckton reviews six PCs that'll be right at home in an office environment

eneral-purpose business PCs aren't about ultimate performance, multimedia or graphics power. They don't even need to look pretty. Designed for productivity, their main requirement is to run office applications such as a word processor, spreadsheet and an email client. We expect conservative styling and competitive pricing, typically below £500 with a monitor.

In a networked business environment there will usually be storage available on the LAN server, so you won't need a large hard disk. Although 1TB drives are now affordable, a 500GB drive should be ample unless your business involves storing a lot of video or other large media.

Provided you have sufficient RAM, any modern CPU will provide enough power for low-level admin tasks. For example, Intel's dual-core Core i3 chips should provide ample performance for general use and come with integrated graphics, saving you the cost of buying an additional card. For demanding users, you may wish to go for a more powerful Core i5 processor. These might be used for manipulating very large spreadsheets or working with high-resolution images or video.

An AMD processor such as the FX-6100 can form the basis of a low-cost system, but performance is way below what can be achieved with Intel's Core processors. Even AMD's own previous-generation Phenom chips can sometimes outperform the FX-6100.

A 4GB memory setup will be fine – even 2GB should be okay, although 2x 1GB kits aren't as cost-effective. Memory is relatively inexpensive, but to avoid waste you should aim to add to rather than replace your existing allocation.

We would normally expect a standard processor cooler to be installed, but third-party cooling fans can help to reduce disturbing noise levels in the office.

The motherboard won't need the latest and greatest features, although some spare memory slots may prove useful so that extra RAM can be added later. Power-management and fan-speed control can also help to save you money and create a more peaceful working environment. There's no point investing in an enthusiast-grade motherboard as the features gained, such as overclocking and the ability to add multiple graphics cards, are of no benefit to the office user.

If you're using an Intel processor, the low-cost H61 Express chipset should provide all you need for a basic office PC, while keeping down the price. However, chipsets designed for business use, such as the B75 Express, support Intel's Anti-Theft Technology and Small Business Advantage platform (SBA). SBA includes features such as software and PC health monitoring, plus the ability to block the use of USB ports by unauthorised users.

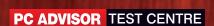
Integrated graphics solutions provide enough graphics power for business applications, so you're unlikely to need to add a graphics card to your specification. However, you may want to consider an entry-level one if you're running a vast multi-screen setup or higher display resolutions than 2048x1536 pixels.

For monitors, a usable 18.5- or 20in screen starts at around £60. Due to the consumerisation of IT, most screens are now 16:9 widescreen; great for watching films, but ill-suited to word processing or spreadsheet work. Older 4:3 or 5:4 models are all but extinct, but you may find a good compromise with a 16:10 model. For most business use, a cheap TN panel works fine; for any work that requires colour accuracy or decent viewing angles, get an IPS model.

Wireless keyboards and mice can sometimes cause issues in the workplace due to RF interference between

adjacent workstations. A decent wired kit is ideal, while quiet-typing keyboards can be less distracting to others. For systems used by full-time typists, high-quality mechanical keyboards may result in better productivity.

For small businesses with just one or two PCs, you might think it saves money to opt for Windows 7 Home Premium. Windows 7 Professional is essential if you need to connect to a Windows server or have compatibility with older software designed for XP. The Windows XP Mode in





Windows 7 Pro places more demands on the processor and memory, so invest in both if you'll need to make much use of this feature. You may find it preferable to specify a quad-core CPU and 8GB of memory. Network backup and restore was also stripped from Home Premium. Windows 7 Professional typically adds £50 to the price of a system.

To ensure a level playing field while testing, the systems reviewed here have been supplied with Windows 8 Pro; all are also available with Windows 7. If you're already making

use of XP Mode in Windows 7, be aware that this feature isn't available in Windows 8.

Pay close attention to the warranty offered with a PC. Obviously, a longer period is preferable, but also check the terms and conditions. When you're relying on your PC for the running of your business, an onsite arrangement may save you considerable time and money. Also check to see whether the vendor will collect faulty systems for repair or if you're expected to return to the vendor at your own cost.

ARBICO i5357 PRO

£579 inc VAT • arbico.co.uk • tinyurl.com/cogewfx

If running your business demands plenty of computing horsepower, Arbico's i5357 Pro has all the performance you'll need and more. Like many of its rivals here, it's based on a 3.4GHz Intel Core i5-3570K and has a fast 60GB SSD. It trounced the competition in PCMark 7.

The 'K'-series processor includes Intel's fastest integrated graphics solution, the HD Graphics 4000, rather than the slower chip found in the standard Core i5-3570 and Core i3-3220 processors. However, unless your work involves plenty of graphics or frequent conversion of media files there's little benefit to this in the office.

The system is housed in a CiT Templar Micro ATX case with a matt black finish. The styling is sensible, with none of the gamer bling we often see in these pages, such as unnecessary illuminations and transparent panels. Two USB 3.0 ports are found at the rear, although we'd prefer to see them at the front for easy access.

Arbico offers a two-year return-to-base warranty, which is twice what you get from Eclipse, but much less convenient than the collect-and-return offerings from Chillblast, PC Specialist and Quiet PC. And the second year is labour only; you'll still pay for parts.

All this unnecessary performance comes at a price. At £579, the i5357 Pro is expensive for an office system, and you still need to factor in the cost of a monitor. Some of its rivals here include a decent display at less cost. We wouldn't recommend this PC as a standard desktop for multiple employees, but it may have potential as a performance option for those who need the extra speed.



VERDICT: Very powerful for an office PC, but also pricey, the Arbico i5357 Pro will be of interest only to those who require the extra speed for intensive computing tasks. It's nice to see the inclusion of a 60GB SSD for improved responsiveness, even if we prefer to see larger SSDs to avoid Windows support issues as they become full.

CHILLBLAST FUSION SAPPHIRE

£549 inc VAT • chillblast.com • tinvurl.com/cx5t8x5

Also based on the Intel Core i5-3570K with integrated Intel HD Graphics 4000, the Chillblast Fusion Sapphire delivers powerful quad-core system performance and capable business graphics.

Although the Chillblast lists the same processor as the Arbico, its use of a hard drive rather than an SSD resulted in a much lower performance score in PCMark 7. Of course, speed-boosting SSDs may be an unnecessary expense for an office system.

The system is built inside a matt black CIT Fortress case. This looks the part until you turn it on, when the less-than-subtle blue LED illumination gives away the fact this is really a gaming case.

Aesthetics aside, it's tidy and well-constructed inside, although it lacks cable management and tool-free access. Four front-facing USB ports are provided, one of which supports USB 3.0. The selected motherboard features the Intel B75 Express chipset, with support for Intel Small Business advantage features.

The Fusion Sapphire comes with an excellent 23.6in liyama monitor that boasts an IPS panel. This is a boon if you work with multimedia, delivering more accurate colour and wider viewing angles. IPS may be less important for general office applications, but it's generally much easier on the eyes than twisted-nematic (TN) tech. The liyama also features a pair of integrated stereo speakers.

Chillblast's two-year collect-and-return warranty is commendable. This policy will save you the cost of returning the Fusion Sapphire should something go wrong.



VERDICT: The Fusion Sapphire is competitively priced, performs well and comes with an excellent 23.6in IPS monitor. It offers a modern, manageable motherboard, plus a superior keyboard and mouse combo. But it's over-qualified for the job, and the blue lightshow will be an unwelcome distraction in most office environments.



CYBERPOWER ESSENTIAL 3000

£549 inc VAT • cyberpowersystem.co.uk • tinyurl.com/ah7f4t9

As the only PC here to run an AMD processor, the CyberPower Essential is significantly slower than the competition. And that's despite the fact its 3.3GHz FX-6100 chip has six cores.

Well, to an extent, that is. The FX-6100 doesn't actually offer six independent cores; instead, some components are shared between pairs of cores in a concept rather like Intel's Hyperthreading.

We were more impressed by the Corsair Carbide 200R system case. Unlike many Windows boxes issued at this price, it includes internal cable management, tool-free drive bays, front-facing USB 3.0 ports and a memory card reader.

The system is supplied with a 23.6in Asus VS247H monitor. Although it lacks the image quality of the Chillblast's IPS display, it's a premium model and noticeably better than the bargain-bin Edge10 screen listed by Eclipse. It also provides the system with basic sound via its built-in speakers.

A 1TB hard drive is fitted, along with a generous 8GB of system RAM. The latter leaves two spare memory slots for upgrades.

The Logitech K120 wired keyboard and mouse set is an acceptable budget combo, but inferior to the Chillblast's MK260.

The Essential 3000 would attract few complaints from office users but, when compared to the competition here, it's clear that you can get a lot more for your money. Add in the poor warranty and the very high power consumption of the AMD chip – almost three times that of competing Intel systems – and the Essential loses appeal.



VERDICT: The CyberPower Essential 3000 offers everything you need to start getting work done at £549. It's fast enough for daily computing tasks but, given that its AMD FX-6100 processor lags so far behind the competition in performance and economy, we're unable to recommend it within this group.

ECLIPSE EBIZ PRECISION i322H61

£569 inc VAT • eclipsecomputers.com • tinvurl.com/abfzoa3

Eclipse has taken a balanced approach in designing its eBiz Precision i322H61. The temptation to chase benchmark scores has been wisely resisted - a Core i3-3220 dual-core chip is ample for most office tasks.

Savings on the processor have allowed the £569 budget to stretch to a 120GB Crucial V4 SSD, which complements a 1TB hard disk for fast booting and snappy operation. The SSD makes a huge difference to overall performance; this was reflected in PCMark 7, in which the Eclipse scored nearly as highly as the quad-core Chillblast.

A generous helping of 16GB of RAM provides plenty of scope for multiple applications to run concurrently; although cutting this to 8GB would have brought the price closer to some of its £549 rivals.

Eclipse supplies a Microsoft Wired Desktop 400 keyboard and mouse combo, which is specifically designed for business. It features an ambidextrous mouse and spill-resistant housing.

The Precision uses a basic Asus P8H61-MX USB3 motherboard, which lacks some of the management features of B75 Express-based boards. And although the system case looks professional from the outside, the internals are messy due to a lack of cable management.

A budget 23.6in Edge10 monitor is included, which may seem to add value to the system, but it doesn't match the quality of the Asus or liyama models offered by CyberPower and Chillblast. We would expect such cost-cutting to reflect in the final price, too.

Also disappointing is Eclipse's standard one-year return-to-base warranty, which is the worst this group has to offer.



VERDICT: The combination of a low-performance processor and a fast SSD is evidence of some clever thinking and wise distribution of the available budget. So why is there 16GB of RAM? We'd prefer to see this budget used on a better motherboard or monitor. The Eclipse eBiz is simply too expensive for what it offers.

PC SPECIALIST MPC-3470T

£479 inc VAT • pcspecialist.co.uk • tinyurl.com/adm2bej

As the only small-form-factor PC here, this PC Specialist immediately stands out. The 112x230x264mm MPC-3470T is much smaller than the competition, making it a good fit for cramped offices.

But a small, tightly packed system case demands better cooling due to restricted airflow. PC Specialist has simply fitted noisy fans.

Power consumption, and therefore heat, are kept low by the selection of an Intel Core i5-3470T processor. This low-power version of the quad-core chip has a standard clock speed of only 2.9GHz, but it will still Turbo Boost to 3.6GHz when required.

When idling at the desktop, the MPC-3470T consumed only 27W. And it remained efficient under full load, drawing 53W.

There is a hit on performance, but the PC Specialist beat CyberPower's AMD-based system in PCMark 7. It also feels reasonably quick and responsive, despite the lack of an SSD.

The case offers tool-free access, plus a memory card reader and a DVD writer. The motherboard also provides VGA, DVI and HDMI outputs. The only thing missing is a monitor.

Remember to factor in the price of that display when comparing the PC Specialist to other systems in this round-up. You may find that its £479 price tag doesn't offer the value it implies.



VERDICT: Very small and neat, the PC Specialist MPC-3470T is a decent quad-core PC with low power requirements. Its performance is more than adequate, but it lags a little behind the fastest systems. Note that the cramped construction means this PC won't be as easy as its rivals to maintain or upgrade.

	ARBICO £579 inc VAT	CHILLBLAST £549 inc VAT	CYBERPOWER £549 inc VAT
Product name	i5357 Pro	Fusion Sapphire	Essential 3000
Processor	3.4GHz Intel Core i5-3570K, quad-core	3.4GHz Intel Core i5-3570K, quad-core	3.3GHz AMD FX-6100, six-core
CPU cooler	Xigmatek Apache	Standard Intel cooler	Standard AMD cooler
Memory	8GB (2x 4GB) 1,600MHz DDR3	8GB 1,333MHz DDR3	8GB 1,600MHz DDR3
Storage	1TB HDD + 60GB SSD	1TB HDD	1TB HDD
Power supply	Ace 650W	EZCool 500W	Winpower 450W
Motherboard	Asus P8B75-M LX Plus	Asus P8B75-M LX	Gigabyte GA-78LMT-USB3
USB ports	2x USB 3.0, 6x USB 2.0	3x USB 3.0, 7x USB 2.0	4x USB 3.0, 4x USB 2.0
Display	None	23.6in liyama X2377HDS (1920x1080, IPS)	23.6in Asus VS247H (1920x1080, LED)
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Integrated
Sound & speakers	None	Onboard sound, speakers built into monitor	Onboard sound, speakers built into monitor
Connectivity	Gigabit ethernet	Gigabit ethernet	Gigabit ethernet
Ports	DVI, VGA, PS2, mic, headphone jack	HDMI, DVI, VGA, S/PDIF, mic, headphone jack	HDMI, DVI, SVGA, PS2, mic, headphone jack
Case	CiT Templar Micro ATX	CiT Fortress	Corsair Carbide 200R
Keyboard & mouse	Logitech MK120 wired combo	Logitech MK260 wireless combo	Logitech K120, Logitech B110, wired
Optical drive	24x DVD±RW DL	24x DVD±RW	24x DVD±RW
Operating system	Windows 8 Pro	Windows 8 Pro	Windows 8 Pro
Extras	None	Family software pack	12-in-1 card reader
Warranty	2-year return-to-base (1-year parts)	2-year collect-and-return	3-year return-to-base (1-year parts)
PCMark 7 Overall	6,037	4,217	2,156
PCMark 7 Productivity	4,985	2,563	1,470
PCMark 7 Computation	20,619	20,004	7,045
Power consumption ¹	41/108	36/84	91/168

QUIET PC SERENITY VALUE

£795 inc VAT • quietpc.com • tinyurl.com/9wp5sss

It's called the Serenity Value, but this Quiet PC system is the most expensive PC in our group test. That doesn't come as a shock, of course, since Quiet PC typically selects premium components for extra-quiet computing. That's ideal if you work in a library, and it could result in a less stressful working environment elsewhere.

Mechanical components such as fans need to be of a high quality if they are to operate with reduced noise. The system case is built with sound-proofing materials and the PSU is designed for peace.

Quiet PC has also replaced the 3.5in hard disk with a smaller and quieter 2.5in laptop drive. But at £795, excluding a monitor, you're unlikely to put one of these on every desk in the office.

There are some areas in which Quiet PC could have reduced costs. The Serenity Value is fitted with one of the fastest processors available, a 3.4GHz Intel Core i5-3570K, and paired with an enthusiast-grade Intel Z77 Express chipset.

The Serenity Value lacks an SSD, which severely impacts its benchmark scores. It's fast enough for business use, but we'd want more for what is in essence the price of two office machines.

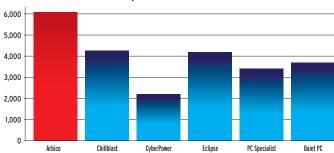
The Serenity Value is in a class of its own when it comes to build quality. It's up to you to decide whether it's worth the price.



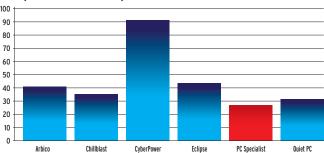
VERDICT: For most business users the Quiet PC Serenity Value will score very highly on serenity, and very lowly in value. For all its superior build quality, ultra-quiet operation and luxury components, it's simply too expensive for all but special-purpose quiet-room installations.

ECLIPSE £569 inc VAT	PC SPECIALIST £479 inc VAT	QUIET PC £795 inc VAT
***	***	***
eBiz Precision i322H61	MPC-3470T	Serenity Value
3.3GHz Intel Core i3-3220, dual-core	2.9GHz Intel Core i5-3470T, quad-core	3.4GHz Intel Core i5-3570K, quad-core
Standard Intel cooler	Standard Intel cooler	Gelid Tranquillo
16GB 1,333MHz DDR3	8GB 1,333MHz DDR3	8GB 1,600MHz DDR3
1TB HDD + 120GB SSD	1TB HDD	1TB HDD
Generic 500W	Power Man 160W	Nexus NX-5000 R3 530W
Asus P8H61-MX/USB3	Asus P8H61-I R2.0	Gigabyte GA-Z77-D3H
3x USB 3.0, 5x USB 2.0	2x USB 3.0, 7x USB 2.0	5x USB 3.0, 7x USB 2.0
23.6in Edge10 EF240A (1920x1080, TN)	None	None
Intel HD Graphics 2500	Intel HD Graphics 2500	Intel HD Graphics 4000
Onboard sound, speakers built into monitor	Onboard sound, no speakers	Onboard sound, no speakers
Gigabit ethernet	Gigabit ethernet	Gigabit ethernet
DVI, D-Sub, mic, headphone jack	HDMI, DVI, mic, headphone jack	HDMI, DVI, VGA, PS2, S/PDIF, mic, headphone jack
NA-705B	In Win BM643	Nexus Thrio 310
Microsoft Wired Optical Desktop 400	Microsoft Comfort Curve 3000, Logitech Optical USB	Gigabyte GK-KM6150 wired combo
24x DVD±RW	8x DVD±RW DL	24x DVD±RW
Windows 8 Pro	Windows 8 Pro	Windows 8 Pro
None	CyberLink PowerDVD, card reader	None
1-year return-to-base	3-year 'Silver' (labour included, 1-year parts)	2-year collect-and-return
4,170	3,419	3,713
3,014	2,000	2,068
15,507	17,506	17,388
43/69	27/53	31/105

PCMark 7 Overall (points)



Idle power consumption (watts)



Conclusion

When reviewing office PCs we are not looking for a family PC with the gaming features removed. We expect systems with balanced performance, low purchase price, manageability, low running costs, a businesslike appearance and ease of maintenance.

The PC vendors here installed Windows 8 Pro at our request, but each also offers Windows 7 Professional as an alternative for business use.

In our view, there's no reason why an office-ready Windows box with a monitor, good keyboard and mouse should cost more than £500. Each vendor has over-specified for their consumer/enthusiast customers and you could easily make them cheaper by reducing the specs such as processor and system case. You may not need a monitor, either. We offer these reviews as a guide to what to buv.

Arbico's i5357 Pro deserves special mention for being very expensive; and Quiet PC's Serenity Value almost stratospherically so for an office admin machine.

The latter does offer the unique quality of being almost silent in operation, but this comes at the cost of £795 - around twice what businesses expect to pay for a PC.

PC Specialist's diminutive MPC-3470T is remarkable for its physically small size and impressively low power consumption, despite its powerful quad-core processor. It's the cheapest PC here, but you'll have to factor in the cost of a monitor.

Eclipse has delivered a nearly balanced system with a relatively modest CPU. Coupled with an SSD it ensures responsive interaction and rapid boot times. It's less over-priced than some at £569.

Or you can save £20 on Chillblast's Fusion Sapphire, which tips the balance in favour of processing power by using an overkill quad-core chip, but skipping on the SSD. This gives broadly similar overall performance to the Eclipse system, but is better suited to crunching video than spreadsheets. It does, however, come with a superior IPS monitor and business-oriented motherboard, and came closest to receiving a Recommended award.

Performance isn't critical for a general office PC, and CyberPower's Essential 3000 offers adequate speed, a good monitor and a built-in card reader at a reasonable price. But it is very much slower than any of the competition, without costing correspondingly less. And it will tax you three times as much in electricity costs.

We'd like to see better-quality peripherals bundled with these PCs. For maximum productivity, the keyboard should be comfortable to type on and a monitor, where supplied, crisp and clear. Most of these systems came with the cheapest examples the vendor could find. If you're doing a lot of typing, invest in something more substantial.

How we test

The PC Advisor Test Centre evaluates each PC in a number of ways:

Application performance

Core system performance is measured using PCMark 7, an industry-recognised test suite that uses 25 different workloads to measure areas such as storage, computation, imageand video manipulation, web browsing and gaming. We understand that results from this benchmark are not absolute, with Intel driver issues in Windows 8 meaning videotranscoding tests can present sub-optimal results. Nevertheless, the results give an idea of the relative performance.

As well as the overall PCMark 7 result. typically a point score between 3,000 and 7,000 with current hardware, we have also published results garnered from some of the suite's sub-routines.

Power consumption

We measure the power consumption of each PC while it's idling at the desktop and when it's settled down after booting up. We then measure again while pushing each PC to the limit. This is achieved by running Prime95 with the maximum number of available threads, and simultaneously running the PCMark 7 storage test. Real-world power consumption will fall somewhere between these two measurements, depending on use.

Subjective assessment

Of course, it's not all about performance. We also pay close attention to the physical characteristics of the PC, its noise output and its build quality, delving inside the system case and taking note of important features such as the quality of components used, cable management and airflow.

Good-quality peripherals are crucial, and where these are supplied we pay particular attention to details such as the quality and ergonomics of the keyboard and mouse, as well as the image quality of the display and its construction. For reasons of image quality and convenience, digital display connections are preferred over analogue ones.

Support

Differences in warranty terms can affect our verdict. Obviously, longer warranties are better, but we also look at the terms and conditions - specifically whether faulty systems must be returned to the vendor at your own cost, and whether both parts and labour are included. For example, some vendors advertise a two- or three-vear warranty that specifically excludes the cost of replacement parts after 12 months.





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ND 3000 Gaming PC

- ✓ Intel i5 3570 (4 x 3.4 GHz)
- ✓ RAM: Corsair 8 GB DDR3 1333 MHZ
- ✓ HDD: 1 TB SATA-III 7200 RPM 64 MB
- Graphics Card: NVIDIA GTX 660 2 GB
- ✓ Motherboard: Gigabyte B75M-D3H
- ✓ Case & PSU: Coolermaster K380 & GX 600W PSU
- ✓ Optical Drive: 24x Dual Layer DVD Re-Writer
- O/S: Windows 8 Standard 64 BIT
- USB2, USB3, LAN, 7.1 Audio, HDMI & Bluetooth

Next Day Delivery PCs

ND 500 Gaming PC

Amazing Price & Performance!

- ✓ AMD FX 4100 (4 x 3.6 GHZ)
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- √ 120 GB SATA-III SSD
- ✓ Gainward NVIDIA GTX 650 1 GB
- ✓ Gigabyte 78LMT-S2P Motherboard

Included Benefits

FREE - 16 GB FLASH DRIVE FREE - UK DELIVERY FREE - 3 YEAR WARRANTY

FREE - WEBROOT / NERO / POWERDVD



ND 1000 Gaming PC

Amazing Spec - Amazing Price

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- √ 16 GB DDR3 1333 MHZ RAM
- √ 1 TB (1000 GB) SATA-III
- ✓ Gainward NVIDIA GTX 650 1 GB
- ✓ Windows 7 or Windows 8 Included

Included Benefits

FREE - 16 GB FLASH DRIVE

FREE - UK DELIVERY

FREE - 3 YEAR WARRANTY

FREE - WEBROOT / NERO / POWERDVD



ND 4000 Gaming PC

EXTREME Performance - LOW Price !!!!

- √ i7 3770K (4 x 3.5 GHZ)
- 16 GB DDR3 1333 MHZ RAM
- √ 1 TB (1000 GB) SATA-III
- ✓ Gainward NVIDIA GTX 660 2 GB
- ✓ Gigabyte Z77-D3H Motherboard
- ✓ Windows 7 or Windows 8 Included

Included Benefits

FREE - 16 GE FLASH DRIVE

FREE - UK DELIVERY

FREE - 3 YEAR WARRANTY

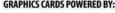
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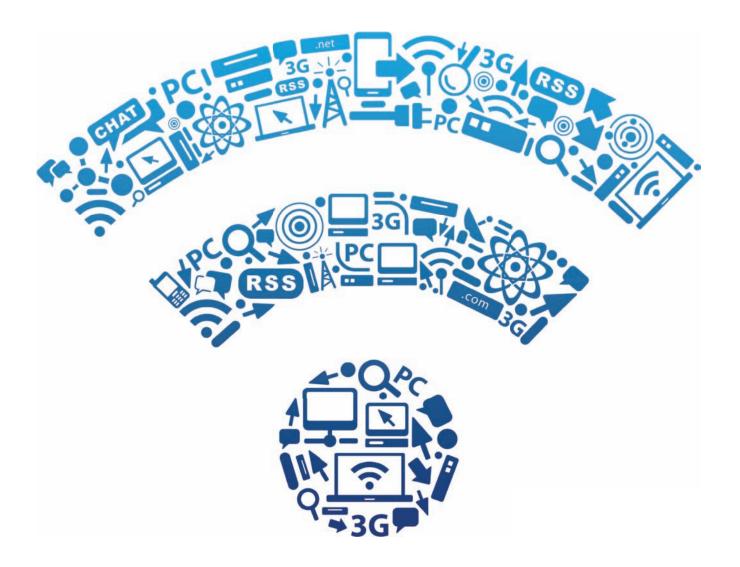
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Make the most of your Wi-Fi

Mike Bedford explains how you can put your wireless network to better use

hree quarters of us now have a home Wi-Fi network, which means we can access the internet from any room in the house. Convenient though this might be, it's barely scratching the surface of what's possible from wireless internet. Our aim in this feature is to help you unleash that potential.

Our guide will show you how to better use what you already have. So, for example, without spending a penny you can share files between computers and print wirelessly from your laptop.

If you are prepared to invest in some extra kit, though, things just get better. A NAS drive is a worthwhile addition to your wireless network, as we'll demonstrate.

While you probably think of a Wi-Fi network as a computing resource, its potential goes far beyond. We'll also look at how you can use your network for homeentertainment and -automation. In particular, we'll explain how to stream audio around the house, control your home-entertainment system from a phone or tablet, and even keep an eye on what's occurring via IP cameras.

If you start to use your wireless network for more than just web browsing, though, you might find it starts to run out of steam. We'll also explain how to upgrade your Wi-Fi to cope with the increased demand.

This might mean buying a faster wireless router, for example. We'll guide you through the Wi-Fi jungle, explaining the difference between 802.11g and -ac, and 2.4- and 5GHz. We'll also provide some tips on how to improve the performance of your wireless network, without shelling out on new kit.

Let's get started.



Share your internet

If you're new to networking, your PC may be connected with an ethernet cable to a Wi-Fi router and you have yet to take advantage of wireless connectivity in the home. As a first step, then, we'll explain how to wirelessly access the internet on a laptop.

If you're going to switch on wireless internet in your home, you should be aware that the signal may also be accessible to your neighbours. Allowing others to piggyback on your internet connection can slow it down, and it can open access to your personal files. See Configure security on page 89 to find out how to secure your wireless network.

Modern laptops have Wi-Fi connectivity built in. If yours doesn't, USB adaptors that add this functionality are very cheap and easy to find. Most such adaptors support the current 802.11n wireless standard, but will be backwards-compatible with older 802.11g. If your router is an 802.11g model then consider upgrading for faster wireless performance. See Wi-Fi standards on page 88 for an explanation of these terms.

To wirelessly connect your laptop to the router, click the Wireless Networks icon in the Windows 7 taskbar. In XP, this icon depicts a PC and a red cross.

Find and select your router in the list that appears. If you don't know its name, look on the rear panel or original packaging for an SSID. The network name might include your router manufacturer's name and a string of numbers or letters. Typically, your router will

be at the top of the list, which is ordered by signal strength.

Enable Connect automatically, which will allow your laptop to automatically connect to the internet in future, then click Connect. You'll be prompted for a password (again, if you don't know this, look on the router's rear panel or original packaging, or search the manual for a default code).

You are now connected to the internet. Launch your web browser to begin wirelessly surfing the web.

Share resources between PCs

The most common use for a wireless network is to share resources such as files and printers between computers. There are several methods of achieving this, but the easiest solution is to use Homegroup.

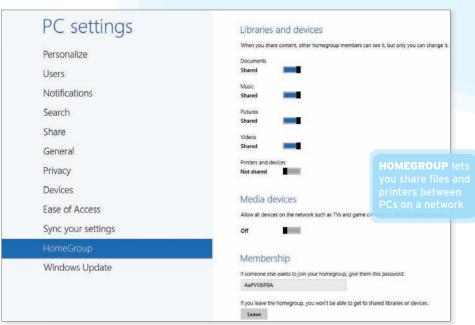
Setting up a Homegroup in Windows 7 or 8 is straightforward, and doesn't require additional hardware. See tinyurl.com/ad87teq.

If one or more of your computers is running an earlier version of Windows that doesn't support Homegroup, you can still get them to talk to each other. Head to tinyurl.com/bz352y3 to find out how.

Having set up a Homegroup, it's easy to share or un-share folders, documents and printers between your PCs. To share a folder or document, simply right-click it in Windows Explorer and select Share with from the drop-down menu. You should then choose to share it with Homegroup, opting to provide either read-only or read-and-write access.

To share a printer, select 'Devices and Printers' from the Start menu, double-click the printer you want to share, then click 'Display Printer Properties'. Select the Sharing tab in the Properties dialog box for your printer and choose 'Share this printer'.

You should now be able to see in Windows Explorer any files and printer(s) you've shared on other computers in the Homegroup (or on the network if you're not using Homegroup).



Access your files via a NAS drive

NAS stands for network-attached storage and is, in essence, a hard disk that is connected to a network rather than a PC. You can share files and folders on any PC connected to a wireless network, but using a NAS provides a better solution in several respects.

First, if you have computers and mobile devices running various operating systems, a NAS could share files with them all including over the internet. Without a NAS, sharing files among these devices would be not only time-consuming, but potentially impossible (with certain combinations of OS).

Second, using a NAS means you don't have to leave switched on 24/7 any PC that contains shared files. Although the NAS itself will be constantly powered on, it is designed to operate in this manner. A NAS drive will consume significantly less power than your desktop PC, which is good for the environment and your wallet.

Most NAS drives can also download files from the internet, and have other functions including a print server, which will be accessible to any PC at any time.

Third, storing all your files - documents, videos, photos, music and more - on a NAS drive provides one central repository, rather than you having to remember on which machine a particular file is stored.

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NAS devices cost from as little as £50, although you tend to get what you pay for in terms of capacity, performance and features. A decent NAS device that includes a terabyte of storage will cost £80-plus. In addition to pre-built NAS

drives with a certain storage capacity, it's possible to buy the enclosure alone, then add your own hard disks. Synology's DiskStation range is particularly good in this respect.

Some NAS devices operate wirelessly, but we recommend hardwiring one to your wireless router using an ethernet (or network) cable. This will provide a faster connection than a wireless link, and it won't unnecessarily clog up your Wi-Fi network.

Even though the NAS itself is connected

to the network via a cable, all your PCs will be able to wirelessly access its files through the router.



Moving around a printer or scanner to use it with your various PCs is a hassle you can do without.

Much better is to have a printer or scanner connected to your wireless network so that it can be accessed by any computer. There are various ways in which this is possible.

You could connect via USB the printer to any PC that's part of the Windows Homegroup or network. However, to print from another PC, this host machine will need to be switched on. This wastes energy. A much better solution is to use a NAS drive that has a print server, if you have one.

Alternatively, you can directly attach the printer to your wireless router - either by using an ethernet cable or wirelessly, if your printer supports that option. Most printers these days support ethernet, which is particularly useful in office environments, while built-in wireless connectivity is becoming increasingly popular.

If you're planning to buy a new printer, it may make sense to look for an all-in-one model that includes print and scan facilities, plus built-in Wi-Fi. So-called multifunction printers allow you to scan as well as print wirelessly. When you connect an older all-in-one device (which doesn't have built-in networking) to a NAS drive or router's USB port, it may not be possible to use its scanning component.





Sync your stuff

If you have more than one computer you'll probably want to ensure that your music, photos and documents are kept in sync between them.

Various cloud-based services (see our top 20 at tinyurl.com/a9wwndk for suggestions) provide this functionality and will work between different devices, such as a Windows laptop and an Android smartphone or tablet.

This is handy if you spend a lot of time travelling but, when you're at home, it doesn't make sense to transfer data from your laptop to the internet and then back to a smartphone in the next room. After all, this could unnecessarily eat into your data allowance. The solution is to synchronise files across your Wi-Fi network.

There are lots of options, but one solution you might like to consider is Android Manager Wi-Fi. This free app allows the manual transfer of files as well as automatic synchronisation. Download the Windows component from tinyurl.com/2aja5jt and the Android app from Google Play and you'll be in business.

In the same way that you can synchronise your documents via a Wi-Fi network, most

e-readers allow you to download books without involving your PC by directly connecting to the home Wi-Fi network.

It's also possible to sync and back up your mobile devices via Wi-Fi. To set this up with an iOS device, simply connect it to your computer via USB, then, in iTunes, select the device and check the 'Sync via Wi-Fi' box. It's largely the same process for Windows Phones, which sync with the Zune software.



Remote control of your entertainment

Having to use several different remote controls - one for the TV, another for the hi-fi and yet another for the DVD player - has never been popular. Universal remotes are available, but they never really took off.

They often present something of a compromise when controlling a particular device, and touchscreen models are pricey.

You might expect that a smartphone or tablet could be used for this purpose and provide a much better user interface, even when you're controlling just one device. However, most devices don't have the infrared port required for communication with TVs and the rest of your kit.

This is now starting to change. More and more home-entertainment equipment has built-in Wi-Fi or wired networking. Plenty of manufacturers provide apps to control their devices, and there are third-party apps, too.

If you have home-entertainment kit from several manufacturers, you'll need to use more than one app. Nevertheless, all can be controlled using the same phone or tablet.

Sky, Virgin and YouView DVRs, for example, allow you to set recordings from a mobile device. DVD players and TVs also have companion apps that let you control everything from basic playback and menu navigation to more advanced features such as showing additional content based on what you're watching.





Listen to music

A Wi-Fi network allows you to listen to music in any room of the house, and there are several ways to enjoy this freedom. Literally thousands of radio stations have an internet stream and, although you can listen to these via any PC, there's an alternative that will likely give you better audio quality and added convenience: an internet radio.

These start at around £60 and rise to several hundred pounds. Commonly, internet radios also support FM and DAB. Just bear in mind that listening to radio via the internet will count toward your data cap.

Another popular option is to stream MP3 audio files via your wireless network. This requires you to have a media server on your network. There are a number of approaches here.

First, if you don't mind keeping it switched on, you can configure as a media PC any PC on the network. See tinyurl.com/aL723ez for instructions on how to do so.

Alternatively, NAS devices can often be configured to act as media servers as well as file servers. Typically, they can act as both a DLNA/UPnP server and an iTunes server.

A third option is the dedicated media server. If your NAS or dedicated media server doesn't have built-in Wi-Fi, just plug it into an ethernet port on your wireless router.

Just as there are several ways of streaming your audio around the house, there are lots of ways you can access that data. The most obvious method is from any computer connected to the network, although this probably won't provide you with the audio quality you hoped for. A much better solution is to use a Wi-Fi-connected hi-fi system, such as multiroom systems from Sonos or Pure.

Alternatively, you could opt for a standalone music streamer, such as an internet radio (virtually all models will also



play music from your local network) or connect a dedicated network player such as a Naim NDS to a hi-fi system.

Stream video

Just as you can stream audio across a Wi-Fi network, you can also stream video. This is an increasingly popular way of accessing your movie collection - you can have your entire collection on tap, without ever having to get up and put a disc into the DVD player.

While we wouldn't suggest that you throw away your DVD and Blu-ray discs (after all, they form a convenient backup), it's far easier to find what you're looking for on a media server than by rummaging through shelves full of discs in boxes.

The cheapest way to stream video is to set up one of your PCs as a media server. See tinyurl.com/aL723ez for instructions on how to do so. Alternatively, as we've said before, if you want to avoid having to keep your PC switched on all the time you could invest in a NAS device, making sure you choose one that can work as a media server.



You could use another PC or laptop to view video stored on a PC or NAS media server, but you'll probably prefer to watch it on a large-screen TV. It's usually possible to connect your laptop or PC to your TV with an HDMI cable, but you can also wirelessly stream video if your laptop has built-in Wi-Di (you'll still need a receiver to connect to the TV, such as the Netgear Push2TV HD), or use a kit that includes both the video sender and receiver, such as HP's Wireless TV Connect.

However, rather than using a laptop or PC, you're usually better off buying a dedicated media streamer, such as the D-Link Boxee Box, Roku 2XS or Western Digital WD TV Live. If you have a Mac rather than a PC, or simply a burgeoning iTunes video library, an Apple TV is likely to be the best choice.

Don't forget your TV itself may have the capability to play video files across a Wi-Fi network. Most 'smart' TVs have a built-in media player that can play files from a local USB stick, but also across your home network from a DLNA or UPnP media server. Many TVs have optional Wi-Fi dongles, but can usually be connected to your wireless router via a standard network patch cable.

Finally, you can use your Wi-Fi network to stream those videos to your tablet or smartphone. Whether you have an iPad, iPhone, Android device or something else, there are many apps that can seek out media servers on your wireless network and play videos of many formats.

Play online games

Playing games on your PC doesn't have to be a solitary affair. Virtually all games can also be played with (or against) other players online. What's more, if your laptop, PC or tablet is connected to the internet via your Wi-Fi network, you'll be able to enjoy online gaming from these devices, too. However, online gaming doesn't start and end there.

The Nintendo Wi-Fi Connection, for example, allows users of the Nintendo DS and the Wii to participate in online multiuser games via their home

Wi-Fi network. Similarly, the latest Xbox 360 has Wi-Fi built-in; if you have an older model you can add Wi-Fi with a USB adaptor. This permits online gaming via Xbox Live (note that you'll need to pay for the Gold service, which costs between £30 and £40 per year depending on where you subscribe). In the same way, the PS3 uses Wi-Fi to provide a gateway to the PlayStation Network.

Monitor your home

If you want to keep an eye on your home or office, your Wi-Fi network can be the key to your security needs. By adding a so-called IP camera, you'll be able to monitor your property either from a device on the same Wi-Fi network or via the web.

Most cameras can send you an email if motion is detected. Although wired network IP cameras are still available, they're not ideal in many cases. Models with built-in Wi-Fi start from about £35; if you want a high-quality picture with sound, you should budget for at least double this. For extra features, such as motorised pan and tilt (even zoom), prepare to spend hundreds.

Wi-Fi IP cameras differ in their resolution but, in reality, if your application is purely surveillance, the VGA resolution of 640x480 should be adequate.



More important is a remote-controlled pan-and-tilt capability, which will allow you to look around a whole room from a single viewpoint. You can now get this functionality in even some entry-level products.

Something else to look out for and, again, for which you don't have to pay a fortune, is night vision. This is provided by a ring of infrared LEDs around the lens.

A waterproof housing for outdoor use will command a substantial price premium.

Some manufacturers, including Y-cam, provide free apps that allow you to easily view the video feed on your smartphone or tablet via Wi-Fi.



Boost your Wi-Fi

Your Wi-Fi network might have been adequate when you used it only to surf the web from a laptop, but if you want to start streaming HD video, for example, it might not be fast enough.

Here, we'll look at how to increase your network's speed and range. Where possible, we'll show you how to do this using your existing equipment.

Wi-Fi standards

Wireless networking equipment adheres to various standards, which are created by the Institute of Electrical and Electronic Engineers (IEEE) to ensure interoperability between kit from different manufacturers.

Excluding the obsolete ones, the standards that relate to Wi-Fi are 802.11g, 802.11n and 802.11ac. The latter is brand-new and, although you can buy 'ac' equipment, the standard is yet to be ratified. Each standard specifies the headline speed, measured in megabits per second (Mbps).

The headline figures aren't representative of what you'll see in practice, but they do allow comparisons to be made.

your equipment, both the wireless router and your computer must adhere to the same standard. For example, if your laptop supports only 802.11g, upgrading to an 802.11n router won't boost performance, although it might increase the range. In this scenario, you'd also need an 802.11n USB adaptor for your laptop. 802.11g has a headline speed of 54Mbps. This standard has largely been phased out in favour of 802.11n, but you may still be

Remember that if you decide to upgrade

using 802.11g if your computer is more than a couple of years old. If you're buying a new laptop, make sure it

supports 802.11n wireless. This standard has various options, with headline speeds up to 600Mbps. Meanwhile, forthcoming 802.11ac boasts headline figures up to 1.3Gbps. Only enthusiasts should concern themselves with this latest standard for now.

Real-world speeds

The real-world speed you'll get from equipment adhering to a particular Wi-Fi standard is about half the headline figure at

> best. What's more, it reduces with distance. and with the number of walls and floors between the router and PC. For example, while 802.11g offers 54Mbps, you'll achieve only 25- to 30Mbps when your PC is next to the router, and much less the further away it is placed. At the limit of the equipment's range, just before the connection is lost, the actual speed may well be less than 1Mbps.

Distance and obstructions such as walls and floors aren't the only things that will reduce wireless speeds. Another likely culprit is interference from nearby wireless equipment that uses the same channel.

2.4GHz vs 5GHz

Two radio bands are used for wireless internet: 2.4- and 5GHz. 802.11g equipment will operate only on 2.4GHz, while 802.11ac supports only 5GHz; 802.11n permits operation in both bands, and many equipment manufacturers let you choose which frequency to use. Before you make a choice over 2.4- and 5GHz, it pays to understand the pros and cons of each.



The 2.4GHz band has just 13 channels, nine of which are overlapping, while 5GHz has many more. You stand a much greater chance of avoiding interference from other users in the 5GHz band. This, in turn, will make your connection more stable and faster. This is particularly important if you want to use channel bonding to achieve the highest speed 802.11n offers.

As the name suggests, channel bonding uses two 20MHz channels to create a 40MHz channel, theoretically doubling the speed. The problem is that using 40MHz channels reduces the number of non-overlapping channels to just two. In turn, this means





that interference with your neighbours' Wi-Fi equipment is much more likely, leading to poor transfer speeds and the possibility of the connection dropping out altogether. For this reason all 802.11n routers ship with channel bonding disabled by default. Unless you live in a remote area, using 40MHz bands on 2.4GHz is not recommended.

The extra number of channels in the 5GHz band means that using 40MHz channels is much more of a practical proposition, but some experts are suggesting that before too long the 5GHz band will be as congested as 2.4GHz. 802.11ac, meanwhile, also allows 80and 160MHz channels.

Rarely does something offer a win-win solution, though, and 5GHz is no exception. A 5GHz signal's range is generally less than that of a 2.4GHz signal, and this is particularly noticeable if it has to pass through floors and walls - concrete is an especially tricky obstacle.

Some manufacturers of 802.11n equipment allow the use of both bands simultaneously, carrying part of the data stream across 2.4GHz and part across 5GHz. This increases the speed beyond that which is available using either band alone.

Find free channels

As we've said, there are 13 channels available on the 2.4GHz band. Many of these channels overlap, which means equipment using channel 2 would interfere with equipment

on channel 3, for example. There are only four channels that do not overlap -1, 5, 9 and 13 - so many people choose one of these.

By default, many wireless routers are set to automatically select a channel automatically; others allow you to specify the channel. If you're having problems with

your Wi-Fi, suffering from poor speed or occasional

dropouts, it may pay to change channels.

Rather than adopting a trial-and-error approach, you should check which channels are in wide use in your neighbourhood. Identifying the free channels is easy with inSSIDer, a free utility from MetaGeek (download it from metageek.net).

If you have a router capable of using the 5GHz spectrum, it's likely that you're one of few people in your area to use it. However, if your neighbour has also invested in gear that operates at 5GHz and is using channel bonding, you may still experience problems with interference. Fortunately, inSSIDer can show usage in the 5GHz band too.

Improve your range

It's not uncommon to find that your Wi-Fi network doesn't reach every corner of the house, especially if some of the internal walls are brick or block construction, as opposed to plasterboard. Extending the range can be carried out in several ways, some of which won't cost you a penny.

First, coverage will be improved if you are able to position your wireless router as close to the centre of the building as possible. Remember that it doesn't have to be positioned by the telephone company's master socket; you could also plug a router into any extension socket. (Note, though that you might end up with slower broadband speeds if you do this.)

If the router was previously hardwired to a desktop PC (or other gadgets) without Wi-Fi capabilities, and the wireless router's new home is somewhere else, bear in mind that you will need to get a wireless adaptor or powerline network adaptors to reconnect to the web those devices.

Another option is to increase the range of your wireless router. Some models have removable antennae, in which case you could buy high-gain antennae to replace the standard versions.

Another option is to mount your router higher up, rather than have it languishing on the floor or behind the sofa.

If all else fails, you might have to buy a wireless range extender and position it to cover a different part of the house from the wireless router. These units operate by retransmitting the signal.

Configure security

Wireless routers have built-in security features to prevent anyone accessing your Wi-Fi network without your permission. On older routers this feature tends to be turned off by default. Failure to turn on security means that someone can access the internet via your wireless network, which could slow down your use of the network and, more importantly, if you've shared files or folder on your PCs, your documents could be accessible by anyone. Similarly, anyone could illegally download music or movies, and you would be held responsible.

Details of how to enable security in your wireless router varies from one manufacturer to another, but the principles are the same for all. First, turn on Wi-Fi Protected Access (WPA), which encrypts your data prior to its transmission across the network and decrypts it on receipt. You should then specify a password that must be entered into any equipment hoping to connect to your wireless network. Note that most equipment will store this password; if you have to enter the password only once then it's worth using a strong password. Check the user manual to find out how to change your wireless router's security settings. ⊠



s 2013 gets into full flow, we look further ahead to bring you a round-up of the main tech themes of the future. Although we're unlikely to see any major breakthroughs in the near future, such as flexible LCD displays going onsale, there's plenty to whet the appetite. From hybrid laptop/tablets to Ultra HD TVs and affordable full-frame-sensor cameras, it should be an exciting next couple of years.

ALL-IN-ONE AND DESKTOP PCs >>

Predictions about what will happen at the end of the PC era have been floating around for years, and they become more dramatic and more inaccurate with each claim. Why would desktops die off now, when they are becoming so cool?

Sure, drastic changes are afoot, and perhaps the desktops of the near future won't look at all similar to the desktops of the present; but change and evolution are facts of life in the tech industry, and adjusting to the new is a necessity.

All-in-one PCs were once seen as a luxury that couldn't possibly support the needs of the average computer user. They lined the walls in sci-fi movies and boasted futuristic-looking programs that had no discernible purpose. Today, they have become centrepieces for PC companies to showcase the glamorous side of desktop computing.

Cheaper and stronger with every new generation of processor, all-in-ones are becoming viable power PCs. In past years, you'd have been hard-pressed to find anything of decent quality even at £999. Today, you can find plenty of options below £700, allowing everyone to reap the benefits without breaking the bank (see page 136).

In the future, most PCs will be equipped with a discrete graphics card or enhanced CPU to power basic games at an adequate framerate, and they will boast built-in Blu-ray capabilities and video-on-demand apps.

More families will adopt media PCs as their centre for entertainment, with touch controls that every user can access, regardless of their experience level. PCs will migrate away from the dark, lonely corners of home offices and storm into living rooms, kitchens, and other main gathering areas to provide endless family enjoyment in the form of streamed movies, TV, creative apps and games.

The conventional desktop systems of today - the tower units that are either parked under a desk or displayed prominently like a show car - will remain popular with certain

niche groups (such as gamers and business owners, at opposite ends of the PC user spectrum). They will also remain the cheapest option for basic computing and office-oriented productivity when glamour and graphical power aren't necessary. Physically, however, they will begin to shrink; indeed, just this past year, we've seen certain computers dwindle to the size of a broadband router, such as the CompuLab Fit-PC3 Pro (reviewed at tinyurl.com/cdt9Lcm).

Enthusiast computers, on the other hand, will continue to grow to the size of a mini filing cabinet to accommodate extra video cards and water-cooling equipment. Some will glow and shine with custom paint jobs and interior lighting, modified to become impressive works of art - indeed, some such models already exist.

The Scan 3XS White Tiger is one such product that takes pride in its size and crushing weight. PCs such as this will be proudly displayed next to a desk bearing multiple monitors and enough gear to make it look like a space cruiser's command deck. Our biggest hope is that games of the future will be able to catch up to the power that some computer enthusiasts will be wielding.

The future of desktops is bright and ongoing, no matter what radical claims to the contrary are made. Although most people may resort more frequently to their phones and tablets to get work done on the go, true computing power will continue to come from that thing plugged into a wall.

LAPTOPS >>

The line between laptops and tablets is rapidly blurring. Five years from now, the line may have vanished entirely.

Today's tablets and laptops are very different gadgets. The ideal consumption devices, tablets are frequently used for passively browsing the web, watching video



and reading on the go. Laptops are better suited for productivity.

In the long run, these two different devices will become aspects of the same hardware. Tomorrow's laptop and tablet will be one and the same - and that's why this section is as much about tablets as laptops.

The first phase of that transition is already under way: Windows 8 hybrid systems show a little of what's possible. Lenovo's Yoga 13, Dell's XPS 12 Convertible Ultrabook and the Sony Duo 11 are already combining elements of tablets and laptops.

But these systems remain more laptops than tablets overall. The Sony Duo 11, with its 11in screen, is the lightest of the bunch, yet it still weighs nearly 1.3kg. Today's pure tablets have smaller screens and limited storage, and lack the performance of fully fledged laptops.

The future will be tablet-centric. Larger tablets, with screens up to 13in, will become lighter and thinner, and will be adaptable for productivity by means of a separate, wireless keyboard. Touch interfaces will improve, although external-pointing devices such as pens and mice will still be needed for precision work.

What technologies are emerging to create this tablet-centric future? An improvement in persistent memory technology (better known as flash memory) is one key component. Even as cloud storage becomes more important, having large-capacity local storage is critical, particularly if you're working in an area



that doesn't offer reliable (or fast enough) wireless broadband.

You'll need to have those big presentations on local storage; and for video and photo editing, ample storage is key. Improvements in cloud storage, along with a decreasing cost per gigabyte, will be important, however, in keeping files and settings in sync between multiple devices.

CPU improvements, of the type we'll see with Intel's Haswell CPU, will permit tablets designed to dock and become fully fledged PCs. CPUs will use less power, for longer battery life, without giving up the performance we see in today's Ultrabooks.

One key improvement that Intel's Haswell and other future processors will bring to the table is better graphics performance, even as power consumption decreases. Today's tablets and Ultrabooks offer limited performance in 3D games, for example. Better 3D performance may mean a wider range of gaming options for tablets.

Connectivity must improve as well. Today's mobile broadband speeds are improving, but bandwidth continues to be expensive per gigabyte. Consumers

> will crave access to higher-capacity wireless broadband such as 4G, and if the mobile operators can't deliver that capacity at a more reasonable cost (EE take note), alternative solutions will likely emerge. Metered connections aren't going to disappear, but prices need to drop well below the levels we see today.

Also coming soon are better tablet docks, tuned for

business use. Such tablet docks will include a full-size keyboard, support for multiple monitors, and additional storage.

The traditional clamshell laptop won't completely disappear, however. Some users will still need access to larger screens, robust keyboards and higher levels of performance. Engineers, professional graphics designers and others may need 15- to 17in systems while on the go. But they will constitute a niche market focused on business users. Mainstream consumers are driving tablet adoption today, and those users will flock to the converged devices of the future.

In the long run, the two extremes will co-exist. Users will have a powerful desktop system that connects and is synchronised via the cloud to mobile devices that every user

will own. People won't need bulky laptops, but instead will carry lightweight tablets whose performance will exceed that of today's Ultrabooks. As a result, consumers will have the best of both worlds: a powerful desktop computer at home, and a tablet with docking options that will offer enough performance and capability for their on-the-go needs.

TABLETS >>

Tablets have evolved at a lightning-fast pace. In 2013, we expect another year of rapid and significant change in areas such as performance, displays, battery life and price.

Just two years ago, the tablet market was in its infancy, dominated by Apple's iPad. Android tablets were barely getting off the ground, and were saddled with an inappropriate smartphone operating system.

Today, we have competition and diversity. Apple's iOS-based fourth-gen iPad and iPad mini still dominate, but Android-based tablets are making inroads. Leading the way is Google's own Nexus line-up, consisting of the affordable Nexus 7 (£159-plus) and the Nexus 10 (£319) with its crazy-high resolution.

Amazon's Kindle Fire HD has done well. It's a competing £159 7in tablet built around Amazon's media and services and running Android apps sold through Amazon's own store. And now Windows 8-based tablets are here, led by Microsoft's own Surface tablet running Windows RT.

So what lies ahead? Big growth, for one thing: research firm IDC expects worldwide tablet shipments to hit 165.9 million units in 2013, up from 117.1 million in 2012. And by 2016, IDC says, worldwide shipments should reach 261.4 million units.

This growth will come at the expense of traditional laptops and desktops, and it will foster a growing acceptance of tablets as tools in everyday life, whether as a second screen to accompany your TV viewing, as an e-reader or as a productivity tool.

3D PRINTING

What can you do with 3D printing? What can't you do with it. Although the technology is still young, it's loaded with potential.

Right now, most consumer-grade 3D printers use ABS plastic as their primary building material. ABS is the material that makes up Lego bricks, but it's relatively brittle, which limits what you can do with it. You can expect to see more versatile 3D printers come to market in the near future. And 3D printers will become considerably more precise: the new Replicator 2 from MakerBot, for instance, can lay down layers

of plastic that are 100 microns thick - about as thick as a sheet of paper. The thinner the layers, the better the result.

manufacturing. Imagine: instead of buying your kid a new action figure for her birthday, you could purchase and download a file that tells your 3D printer how to print one for you. Now that's instant gratification.

We'll cover 3D printing in depth in our next issue.





One of 2013's big stories is likely to be an impending processor battle. That may sound strange - after all, you rarely buy a tablet for its processor alone. And you get what you get - not a lot of customisation or variation can be had for any particular model. But that circumstance doesn't lessen the vigorous competition over tablet performance, and the processor inside can make all the difference in how snappy your tablet feels, or how well your favourite games play.

That's where nVidia's Tegra 4 systemon-chip platform comes in. This quad-core (plus a fifth, low-power core) processor is likely to be a favourite choice in leading Android tablets in 2013.

Its use of four ARM Cortex-A15 processors, up from the Cortex-A9 in use in the Tegra 3, puts Tegra 4 on a par, if not ahead of, the Qualcomm S4 Pro and Samsung's Exynos 5. nVidia claims the new processor is twice as fast as the Tegra 3 in tasks such as web browsing, uses 45 percent less power and could provide up to 14 hours of HD video playback on a smartphone - less, of course, on a tablet with a bigger screen.

You won't see more tablets running Texas Instruments' OMAP platform (currently on the Amazon Kindle Fire HD and Barnes & Noble Nook HD). TI has pulled out of the highly competitive mobile market to focus on embedded systems.

Another processor battleground in 2012 pitted the aforementioned ARM-based platforms, with their efficient battery life, against x86-based platforms such as Intel's Clover Trail Atom and AMD's Hondo. These processors may possess more performance oomph than the ARM processors, but battery life can lag. Their big benefit for Windows 8 tablets is that they can support full Windows and all legacy applications that run in desktop mode. Few Clover Trail tablets shipped in 2012, but look for a deluge in 2013.

Microsoft Windows 8-based tablets will be 2013's biggest tablet wild card. With Apple's iOS tablets firmly entrenched, and Google's Android challengers looking more polished and appealing than ever, can Microsoft tablets hold the same allure and appeal? That remains to be seen. However, the confusion between Windows RT and full Windows 8 tablets may worsen once Microsoft unleashes its highly anticipated Surface Pro tablet, which should be any time now.

We expect more high-pixel-density tablets to hit the market in 2013, continuing a trend begun by Apple's iPad with Retina Display. Look for 1280x800-pixel resolution to become the norm on 7in tablets, and 1920x1200-pixel resolution to pick up steam on 10.1in tablets. Optical bonding, which eliminates the display's air gap and reduces glare, should become more common, too.

Competing with Apple's breadth, other tablet software ecosystems continue to struggle. Google has made progress, albeit slowly, while Microsoft remains far behind in the number of available apps. We expect both Google and Microsoft to expand their respective ecosystems; the trick is whether their quality and quantity can compete with Apple's strong base.

Look for more connected tablets, too. In late 2012 some finally hit the market. One was Google's affordable, unlocked Nexus 7 Wi-Fi + 3G, which works with more than 200 carriers worldwide. By the end of 2013, we'll look back on the connected Nexus 7 and realise that it was the start of a new trend.

Meanwhile, we expect to see prices continue to plummet over the course of the year. As demand skyrockets, so does production - and in response, prices fall. Given today's cutthroat competition, it wouldn't shock us to see a top-tier 10.1in Android tablet selling for well under £200 by the end of 2013.

sensors in these pocket-size cameras are getting much bigger and much better, and we're reaching the point where a pocketable camera will offer the image quality of a dSLR.

The marquee models for this trend are Sony's Cyber-shot RX100 (£480), a compact camera with a sensor nearly three times larger than the ones found in cameras of similar size, and the Sony Cyber-shot RX1 (£2,500), which offers a full-frame sensor that's bigger than those in most consumer dSLRs. Big sensors translate to outstanding images, especially in low-light settings. As other camera companies unveil their own big-sensor pocket cameras, we're betting that this trend is just getting started.

And that just covers the point-and-shoots. In dSLR-land, full-frame sensors are showing up in more moderately priced camera bodies. Before the latter half of 2012, a full-frame dSLR fetched at least £2,000, but two more recent dSLRs - Nikon's D600 and Canon's EOS 6D - sell for less than £1,300 each (without a lens). That's not cheap, but it's cheap for full-frame. Expect that more-forless theme to continue.

Strong sales for dSLRs and mirrorless cameras: Fewer people have been buying basic point-and-shoot cameras over the past few years, thanks to the convenience and improved capabilities of camera-equipped smartphones. Cameraphones are sufficient for handling everyday photography, but they've also introduced many casual shooters to the fun of photography - from which they develop an interest in higher-quality cameras that capture noticeably better photos.

According to estimates by the Consumer Electronics Association, dSLR sales are expected to increase by 13 percent over 2011, while point-and-shoot sales will continue to trend downward by nearly 8 percent. And first-time dSLR owners will have a number of easy-to-use, well-priced options to choose from. You can find several good dSLRs for £300 to £600 with a bundled lens.

Compact system or mirrorless cameras have also matured nicely. Compared with just last year, the mirrorless category offers many

CAMERAS >>

We expect several trends to emerge in connection with this year's new cameras.

Big sensors in small cameras: Several excellent premium compact cameras have been released in the past few years, but 2012 was an especially innovative year for the category. That's because the image



more lens options to choose from, smaller bodies, and cameras built for both beginners and seasoned shooters.

App cameras and connected features:

Wi-Fi-enabled cameras aren't new - they've been around since the Kodak EasyShare One debuted in 2005. However, we've never seen as many connected cameras as we have in the past year, and certainly not as many highend models with wireless-sharing features.

Wi-Fi sharing is now an option in dSLRs and compact interchangeable-lens cameras, not just in basic point-and-shoots. Canon's full-frame EOS 6D dSLR, Sony's new NEX-6 and NEX-5R interchangeable-lens cameras, and Panasonic's Lumix GH3 mirrorless camera all offer Wi-Fi sharing features to complement their high-end imaging and video capabilities. Sony's latest NEX cameras also run proprietary, add-as-you-go apps that let **NOKIA's LUMIA 920** you extend the camera's charges wirelessly functionality over time.

On the point-and-shoot side, the 21x-optical-zoom Samsung Galaxy Camera is the most ambitious of the new breed, as it offers 4G and 3G connectivity,

runs Android 4.1 and all its compatible apps, and boasts a huge 4.8in touchscreen. Nikon's Coolpix S800C compact camera also runs Android. Wireless sharing, apps and smartphone-like features are bound to find their way into many more cameras in the next year.

4K/Ultra HD camcorders and dSLRs:

Much hype has surrounded 4K (or Ultra HD) TV recently, and you'll see a few sets released in 2013. But Ultra HD is still a few vears from being mainstream-ready, in large part because not a lot of 4K content

is available for viewing. And no wonder: at 3840x2160 lines, 4K footage has four times the resolution of 1080p video.

Right now, the cameras and camcorders capable of capturing 4K footage are professional-level models, most of which cost thousands of pounds. The exception is the rugged £250 GoPro Hero3 camera, which can capture 4K video, but only at a sluggish rate of 15 frames per second.

In the coming year, watch for more video-

capable dSLRs and high-end consumer camcorders that can capture 4K video. These models will be strictly for the early-adopter crowd - very expensive and storage-hungry - and, unless you've already bought a 4K TV or projector, will you notice the difference when viewing favourite videos? Highly unlikely.



Your current, top-ofthe-line smartphone will be outdated by this time next year. That's

not entirely a bad thing: advances in mobile technologies come at an astonishing pace, and smartphones will continue to get smarter and better as time goes on. So while you may think your current phone has a lot of nifty features, your next smartphone will be capable of even more.

=

By looking at today's smartphones, we can get a sense of the kinds of features smartphone makers will focus on in the coming months. Here are some of them.

Wireless charging: This isn't anything new: for years now, you've been able to wirelessly

charge your smartphone, thanks to battery cases and charging pads from companies such as Duracell and Energizer. Only recently, however, have we started to see smartphones with inductive charging coils built into the handset itself, obviating the need for special cases or battery packs to wirelessly charge the phone. You can recharge models such as the HTC One X+ and Nokia Lumia 920 with any wireless charger that supports the Qi standard, and more Qi-compatible handsets are expected in coming months.

Quad-core becomes the norm: Phones with quad-core processors may be newcomers, but we expect that they will quickly become standard in 2013. These processors let you run more-advanced apps on your smartphone, and they are especially good for playing games with HD graphics. If you still use a phone that has a single-core processor, it may be time to consider upgrading to something with a little more oomph.

Bigger screens: The era of smartphones equipped with small screens is quickly coming to an end. Most of the phones released in 2012 had screens measuring 4.3in-plus, and that trend seems likely to continue in 2013. While having a large screen makes a phone difficult to use in one hand, the extra screen space has some significant benefits: you can view more content without constantly having to zoom in and out, and typing on the onscreen keyboard is much more enjoyable, thanks to the buttons' being larger and easier to accurately tap.

NFC becomes big (again): Yes, it's this old song and dance. Last year there were lots of predictions that near-field communication (NFC) would take off in 2012, and here we are a year later saying that it will surely happen in 2013. Plenty of phones today ship with an NFC chip, although many manufacturers, retailers and customers don't seem to

STORAGE

We expect to see many more hybrid hard drives arriving in 2013. Seagate and Samsung were first to market with these devices, which combine a large cache of flash memory with a mechanical drive. Hybrids deliver some of the speed of an SSD, as well as the voluminous capacity of a conventional hard drive. Both Western Digital and Toshiba plan to enter this market. WD has not disclosed its plans in detail, but

Toshiba has announced that it will offer a 1TB hybrid drive outfitted with 8GB of flash enough to load an operating system and frequently used files.

Hard drive prices will remain high in 2013: the industry is still recovering from the mass flooding in Thailand that damaged much of its production capacity. At the same time, the prices for true SSDs will continue to fall, as production of 20nm Nand flash ramps up.





know what to do with the technology. Both Google and Microsoft let you use NFC to make purchases with your phone, but most people are reluctant to give up their physical wallet for a digital one. Samsung's recent ad campaigns showing people sharing media via NFC may help in demonstrating ways that the technology can be useful for things besides mobile payments, but broad acceptance of NFC won't happen until the public is ready.

TVs AND DIGITAL **ENTERTAINMENT** >>

10 movies (ranging from Spider-Man to the classic The Bridge on the River Kwai), with the promise of more to come.

Smarter screens: Your TV may already be smart, but it will soon get smarter. Existing TVs can run various apps that let you do such things as watch Netflix movies and tweet but that's just the beginning. The range of apps available will continue to widen, with existing companies jumping into the TV app market. For instance, Electronic Arts recently announced versions of the popular board games Monopoly and the Game of Life

with a feature called Smart Interaction, which blends voice-, facial- and gesturerecognition. Panasonic has also introduced Voice Interaction.

Google TV also now includes voice control, so you can change channels or search by saying the name of the station or show.

Apple has been experimenting with voice recognition for some time through Siri on the iPhone, and we hear persistent rumours that this might be one of the key features that its long-expected TV will offer, or that future models of the Apple TV receivers could include.



In 2013, televisions are going to get bigger. Not in size, but in resolution, with the first displays to support Ultra HD hitting the market. The Ultra HD standard offers two resolutions: 7680x4320 pixels (16 times as many pixels as on a standard HDTV, known as 8K), and 3840x2160 pixels (aka 4K).

Both can support frame rates of up to 120fps for smoother video, and the higher resolution makes images sharper and more realistic. Two manufacturers have already released Ultra HD models: LG offers the 84in 84LM960V, and Sony has its same-sized Bravia XBR-84X900. Because Ultra HD is so new, both are pricey, costing over £20,000.

Ultra HD: These displays may share the problem that 3D TVs did at launch: lack of content. Although the Ultra HD standard has been finalised, no straightforward way to get Ultra HD content exists, as no Blu-ray or broadcast standard supports it.

So buying an Ultra HD right now would appeal only to the most ardent early adopter, until a clear-cut way to deliver the content to your TV appears. In the meantime, Sony is lending early purchasers (in the US) of its Bravia XBR-84X900 model a server that is preloaded with Ultra HD content, including

for Samsung Smart TVs, and other gaming companies are looking at this area.

The number of ways that your TV can receive this extra content will increase, too; the forthcoming ATSC 2.0 standard will allow broadcasters to send files to your TV on the same signal as the show itself, so they could offer things such as alternate endings or behind-the-scenes videos similar to those found as extras on DVDs. This standard (to be finalised early in 2013) also offers the possibility for a TV to send data such as live sports stats and betting information to a second device - a phone or tablet, say - alongside the live video on the TV, for example, or a link to a site running a TV ad.

However, the ATSC 2.0 standard won't include support for broadcasting Ultra HD video; that will have to wait for ATSC 3.0, which won't be ready until at least 2015. You'll also have to add extra components to your media centre; current displays will require another decoder box.

Talking to your TV: Soon, yelling at your TV might be productive, since several manufacturers are adding voice control and other technologies to make your TV easier to use. Last year, Samsung launched sets

ROUTERS

The IEEE should ratify 802.11ac this year, which will make people more comfortable buying routers based on the standard (rather than on a draft of the standard). The performance of 802.11ac routers from Asus, Linksys, Netgear and other manufacturers knocked our socks off in 2012, delivering high throughput and surprisingly good range using the uncrowded 5GHz frequency spectrum. We also expect to see more 802.11ac media bridges shipping this year; buying two expensive routers so you can configure one as a bridge is an unnecessary pain in the neck.

Two other trends should become stronger this year: first, more companies will manufacture routers that include integrated hard drives, similar to Western Digital's My Net 900 Central. Second, routers will become better connected to the cloud, which will make it easier for you to reach your home network when you are on the road.



DISPLAYS >>

Thinner. Higher-definition. Less powerhungry. You can expect these traits to define monitors for desktop and laptop computers for the next two years.

Buyers want, and even expect, longer battery life and sleeker design with every generation of displays. So manufacturers have every reason to keep turning out devices that satisfy that market, recognising that buyers deem the display to be a crucial part of the user experience.

Touchscreens: Windows 8 integrates touch support as no previous version of Windows has done. In the new Windows Start screen and in Windows Store applications, you'll be able to use a multitude of touch gestures, many of them involving full, 10-point multitouch interaction; that is, the display will recognise the unique input from all 10 fingers (or fewer fingers from multiple people). And numerous multitouch displays that fully support Windows 8 are on the horizon, such as Samsung's SC770.

Some new Windows 8 devices come with pressure-sensitive styli that let you digitally draw or paint with precision; we'll continue to see more such products in the coming year.

And what about Apple? iOS devices have led the way for Apple in offering HD displays, so it stands to reason that its touchscreen technology may also be on the way to the Mac, despite the company's long-standing reluctance to adopt it. After all, competitors

such as HP have been putting touchscreens on desktop and laptop PCs for years.

While Apple has so far been careful to maintain the boundary between its iOS and Mac operating systems, it would be harder to maintain that separation if everything had a touchscreen. The latest versions of the OS X have used touchpads as a touch-by-proxy system; users seem to like this compromise.

Better resolution, but slowly: The first rule of monitor shopping is don't skimp on image quality. You can work around awkward pedestals and poorly located cable connectors, but you'll be staring at your screen day in and day out - it's not the place to economise.

Luckily, current-generation touch displays, although expensive, appear to use high-quality components. Most boast in-plane switching (IPS) technology, which offers wide viewing angles and good colour fidelity. Samsung is coming out with new plane-to-line switching (PLS) displays, which the company claims beat their IPS rivals in viewing angles, brightness, image quality and cost of production. Analysts expect to see Samsung's series of low-end PLS-based monitors at some point in 2013.

Right now, you won't find multitouch desktop displays capable of resolutions higher than 1920x1080 (full-HD). Even 27in touch displays are limited to 1080p; and no 2560x1440 resolution displays with capacitive touch are yet available for discrete, standalone monitors. Fortunately, however, the display quality at 1080p is great on many touch displays.

The possibility of integrating multitouch in high-resolution monitors is not far-fetched. Case in point: Dell already sells a 27in all-in-one - the XPS One 27 - that features native 2560x1440 resolution. Whether future touch displays take this direction will depend largely on consumer demand and on how much they are willing to pay. Prices of 27in, 2560x1440-pixel panels are starting to drop, so it's likely that we'll see some high-resolution models with multitouch support in 2013.

In mid-2012, Apple began bringing its HD Retina screen to the MacBook Pro in stages. Those HD screens are expensive, but so far consumers seem to be prepared to pay for them. Even so, the rollout could happen slowly on the desktop, largely because using standard-definition technology for displays of 19in-plus remains more cost-effective. That means that the iMac could be the last to go Retina.

But larger displays might not even be the best use of Retina technology. You could argue that it's overkill for a 24- or 27in monitor; it would be gorgeous, but it would also be awfully expensive.

More screen space and better ergonomics:

Smaller bezels and shrinking profiles are likely to become the norm for both freestanding computer displays and all-in-ones. The newest line of iMacs are 45 percent thinner and 3.5kg lighter than previous generations of the computer, and offer a glimpse of what is to come across the board. One added benefit: the slimmer the panel, the lower the power consumption.

Product designers are doing interesting things with stands and ergonomics, too. The Acer T232HL LCD monitor has a single, curved bar attached via a ratcheted spring mechanism to enable the display to tilt at various angles, depending on how you want to use the hardware. Dell's S2340T (a multitouch display, like the Acer) offers an impressively flexible stand that you can tilt easily at various angles - or even lie completely flat. Plus, its USB 3.0 ports are located on the base and are easy to reach.

Because of the latest in touch integration, we can expect to see more such innovative ideas on the ergonomic front. oximes





PC ADVISOR AWARDS NOMINEES

We are proud to present our roll-call of honour: the best of the past year's technology, and our guide to the brands you can trust and the sites from which to buy

he votes are still coming in and the arguments raging, but the nominees for the *PC Advisor* Awards have been decided for another year. As with last year's awards, there are nearly two-dozen prizes. Many of our award categories have been wrangled over by our team of reviewers and writers, while the rest will be decided by PC Advisor readers before the winners are announced in early 2013.

The purpose of the PC Advisor Awards is to showcase excellence across the diaspora of products and services we cover online, in our

apps, and right here in the PC Advisor print and digital magazines. Nominees and winners have been chosen from a year's worth of reviews, so each represents the best of the best in its particular category.

For the hardware awards, we've split up the categories along similar lines to the Top 5 charts we update every month, while we've divided the software section by program type.

In each case, products in contention had to have been reviewed by PC Advisor editors during 2012. Those reviews could have been online or in print - or, most often, both.

PCADVISOR.CO.UK/AWARDS In addition, there are five PC Advisor Reader Awards. We will be running an online survey, inviting UK consumers to have their say on the best laptop and desktop PC brands, the best online retailers, and the gadget of the year. From the votes we receive we'll be able to deduce valuable feedback about the brands you favour and how well they live up to expectations. So don't forget to have your

say! Head to pcadvisor.co.uk/awards.

PC ADVISOR AWARDS 2013

WINNER

HARDWARE AWARDS

Best Windows Desktop PC Brand

- Chillblast
- CyberPower
- Lenovo
- · PC Specialist
- QuietPC

Best Budget Laptop

- Acer Aspire V3-571
- · Asus K55VD
- Dell Inspiron 15R 5520
- HP Envy Ultrabook 6-1010ea
- · Lenovo IdeaPad U410

Best Windows Laptop

- · Alienware M14x
- · Lenovo IdeaPad Z580
- Samsung 900X4C
- Samsung Series 7 Chronos
- Toshiba Satellite Z930 Ultrabook

Best 7in Tablet

- · Apple iPad mini
- Google Nexus 7
- Amazon Kindle Fire HD
- Barnes & Noble Nook HD
- BlackBerry PlayBook 2.0

Best 10in Tablet

- · Apple iPad with Retina Display
- Google Nexus 10
- Samsung Galaxy Note 10.1
- Toshiba AT300
- Asus Transformer Pad Infinity TF700

Best Smartphone

- Apple iPhone 5
- Google Nexus 4
- HTC One S
- Motorola Razr i
- · Samsung Galaxy S III

Best Monitor

- AOC i2352Vh
- · BenQ G2750HM
- Dell S2440L
- ViewSonic VX2336s-LED
- Philips Brilliance 241P4QPYES

Best Printer

- · Canon Pixma MX895
- Epson Stylus Photo PX730WD
- HP Photosmart 7520 e-All-in-One
- Lomond EvoJet 2 Office
- Pantum P2050

Best Wireless Networking Product

- Apple AirPort Express
- D-Link DIR-857
- DrayTek Vigor 2850Vn
- TP-Link TL-MR3020
- Netgear WN3000RP

Best Network Storage Device

- Netgear NAS Duo V2
- Qnap TS-659 Pro II
- Synology DS-412+
- WD My Book Live Duo
- Zyxel NSA325

Best Storage Device

- Corsair Performance Pro 256GB
- G-Technology G-Raid with Thunderbolt
- Hitachi Deskstar 5K4000 4TB
- Samsung 830 Series 256GB
- WD Red 3TB

Best Portable Storage Device

- Buffalo MiniStation Extreme 1TB
- Elgato Thunderbolt SSD
- Freecom Mobile Drive Sq 500GB
- iStorage diskAshur 500GB
- WD My Passport Edge for Mac 500GB

Best Graphics Card

- · Asus GTX 660 Ti
- MSI GeForce GTX 670
- Sapphire HD 7770 OC
- XFX 7970 3GB GDDR5
- Zotac GeForce GTX 680

Best Camera

- · Canon EOS 650D
- · Nikon D800
- Panasonic Lumix DMC-TZ30
- Samsung NX20
- Sony NEX-C5R

Best Audio Product

- Apple GarageBand for iOS
- Bitcount ClearTune
- Cambridge Audio Sonata NP30
- Chord Electronics Index
- Ferguson Hill FH009

Best Digital Home Device

- Belkin @TV Plus
- BT YouView Humax DTR-T1000
- EnergyEgg Solo
- HD Anywhere Multiroom+
- · Sony BDP-S790

Best TV

- Panasonic Viera TX-L47WT50
- Philips 46PFL7007
- Samsung UE46ES6800
- Sony Bravia KDL-46HX853
- Toshiba 46TL963



SOFTWARE AWARDS

AWARDS 2013 WINNER

PC ADVISOR

Best Security Software

- · Bitdefender Internet Security
- G Data InternetSecurity
- Kaspersky Internet Security
- Norton Internet Security
- Trend Micro Titanium Internet Security

Best Photo/Video Software

Adobe Photoshop CS6

- · Adobe Premiere Elements 11
- · CyberLink PhotoDirector Ultra 4
- InPaint
- Magix Movie Edit Pro 2013

Best Game

- Far Cry 3
- Guild Wars 2
- · Mass Effect 3: Extended Cut

- · Torchlight II
- · World of Tanks

Best Mobile Game

- · Bad Piggies
- Draw Something
- Football Manager Handheld 2012
- New Star Soccer
- · Walking Dead for iOS

BUSINESS AWARDS

Best Business Laptop

- Acer TravelMate P6
- Dell Latitude E6420 ATG
- HP ProBook 4530S
- Lenovo ThinkPad X121E 3045
- Toshiba Portégé Z930-108

Best Business Printer

- · Dell C3765dnf
- Epson WorkForce Pro WP-4595 DNF
- HP LaserJet Pro 400 M401dw
- Kyocera Ecosys FS-4300DN
- Samsung ML-2955DW

PC ADVISOR AWARDS 2013

WINNER

Best Business Software

- · Acronis True Image Home 2013
- Dragon NaturallySpeaking 12 Premium
- Nuance PDF Converter Professional 8
- Paragon Drive Copy 12 Professional

READER AWARDS

- Best Specialist Online **IT Retailer**
- Best Laptop Brand
- Best Desktop PC Brand

PC ADVISOR AWARDS 2013

WINNER

- Best Online Retailer
- Best Gadget Of The Year

Have your say and you could win £100 in Amazon Vouchers!

For your chance to win £100 in Amazon vouchers, and to have your say on the latest technology and services, head over to the PC Advisor Awards page and vote now:

PCADVISOR.CO.UK/AWARDS

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Wharfedale

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IDG | W N I T E C

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Access any PC on your own system

It's a reasonably safe bet that your PC or laptop runs Windows XP, Vista or 7. If you want to run a different operating system, say to try out Windows 8, virtualisation is the simplest solution. Instead of fiddling with partitions or separate hard drives, follow our step-by-step guide on page 110 and you'll have that alternative OS up and running in no time.

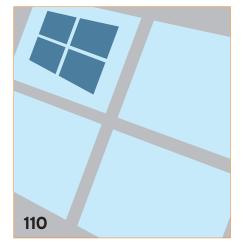
If you're knowledgeable about the inner workings of Windows, you're probably called on by friends and family to help fix their PC problems. To save on time and travel expenses, a simple free utility called join.me lets you troubleshoot their computer from the comfort of your own home. Find out how on page 114.

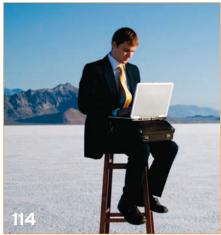
More and more kids are getting their own iPods, iPads and iPhones, or you might lend them your own device. On page 120 we explain how to configure iOS devices so children can't accidentally (or intentionally) run up your bill buying apps, music and films.

Digital photos aren't just precious memories - they're irreplaceable. They are also easily deleted. A good way to protect your photo collection is to back it up to the cloud. On page 116 we explain how to do exactly that using Google Drive.

Index

Troubleshooter 102
Helproom104
Virtualisation110
LogMeIn join.me114
Google Drive116
Quickoffice Pro HD118
iDevices for kids120







QUICK TIP: TRANSFER VIDEOS FROM AN IPHONE TO A PC

Photo Stream, part of Apple's iCloud, lets you take a photo and have it automatically appear in the My this process with video captured by an iPhone?

Dropbox offers an ideal solution. You can sign up at Store. You'll also need to install the Windows Dropbox client, and sign in on both the mobile and desktop apps.

When you launch the iOS app, it should prompt you to allow access to your Camera Roll. It should also ask whether you want to automatically upload photos and video to the Camera Uploads folder in Dropbox. If not,

tap on the cog icon at the bottom of the app to display the settings. Tap Camera Upload, then slide the switch to On. It's advisable to leave the 'Use Cellular Data' to Off unless you have an unlimited data plan.

A couple of points to bear in mind are that photos will upload only when the Dropbox app is running, and will stop a few minutes after your screen times out you'll have to return to the app to continue the upload. Photos and videos will then be accessible via Dropbox, and will download to your PC when it's turned on.

The Dropbox app is also available for Android users, and offers the same functionality. oximes



Converting video formats

Get your videos in the right formats for all your devices. Jim Martin explains how

nlike still images, there is no common standard for video. All cameras can save stills in Jpeg format, and any PC, smartphone or tablet can natively display the resulting photographs; with video, it's a different story.

Devices shoot video in various formats, which may not be supported on every playback device you own (think smartphones, tablets, games consoles, TVs and media streamers, for example).

Your HD camcorder probably stores footage as AVCHD (.m2ts), while your digital camera could use anything from QuickTime (.MOV), Flash (.FLV) and Mpeg4 (.MP4) to Motion Jpeg for video. Mobile phones also use a range of formats, from low-resolution .3GP clips through to 1080p H.264 files.

Video converters allow you to import video clips and convert them to a different format. They support a wide range of formats, so can ready your videos for playback on most devices. Some can also cope with multiple audio tracks (for different languages, say) and subtitles.

To keep things simple, most video converters allow you to select a device, such as a fourth-generation iPod touch, rather than specify the video format required. Some utilities have more presets than others, so your device may or may not be included in the list, depending on its popularity.



There are plenty of free and paid-for converters. One of our favourite free options is Any Video Converter (tinyurl.com/374joh). It's not amazingly quick, but it does a reliable job and is reasonably easy to use.

Freemake (freemake.com) is even simpler to use, but we've had mixed results - some of our converted videos reveal out-of-sync audio or corruption across the bottom edge. Freemake supports nVidia Cuda; if you have a compatible graphics card, the conversion process can be hugely speeded up.

Another popular free option is Handbrake (handbrake.fr). This has always been reliable, but lacks presets: the latest version offers to convert video for the iPad and iPhone 4 only. It's not easy to convert several clips at once.

The process with all converters is the same, though. You point the program to the

video you want to convert, choose a device preset or video format, specify a filename and save location for the converted video and hit Convert.

Depending on the length of the video and vour hardware, the conversion could take from a few seconds to several hours.

Paid-for converters include CyberLink MediaEspresso (tinyurl.com/bggggvd). It costs £35, but includes support for Intel Quick Sync, nVidia Cuda and AMD APP to vastly speed up the conversion process. MediaEspresso can also convert photos and music into the bargain.

If you have video-editing software, it will be able to export your edited movie in a variety of formats, and may have presets similar to the converters we've already mentioned.

Understanding video formats

Using presets is a hit-and-miss affair. You might get poor video quality, or large files that hog your smartphone's storage. Once you understand such things as the resolution and bitrate, you'll be able to manually configure your converter for best results.

Resolution: If you're converting video from an HD source, such as a camcorder, you'll start with a large, high-quality file. Let's say you want to watch it on your phone. There's little point My Videos in retaining the video's full 1920x1080 resolution, even if your phone can handle it.







Smartphones with full-HD (1920x1080) screens exist, but most handsets have lower resolutions. Enter into your video converter the resolution of your phone's screen. This will reduce the size of the resulting video file. The phone won't need to downscale the video to fit, so it should look better onscreen.

Aspect ratio: 1080p video (that's video with 1080 horizontal lines) tends to have an aspect ratio of 16:9. Divide 16 by 9 and you get 1.77, which is the same as dividing 1920 by 1080. To find your phone's aspect ratio, divide the resolution of its longest size by its shorter side.

For the Samsung Galaxy S III, that's 1280 divided by 720. Again, the result is 1.77. For the iPhone 4S, it's 960/640, which is 1.5.

When your converted video has a different aspect ratio to the original, you either lose information or gain black bars at the sides or top and bottom.

Each video converter is different, but it should give you the option of how to handle an aspect ratio change.

Framerate: This is the number of video frames captured or displayed per second. In the UK, we use the PAL standard of 25fps. Movies use video with 24fps. We'd advise leaving the framerate alone, unless your device can't play the video at its original framerate. The original Apple TV, for example, plays 720p video up to 24fps.

Container: Codec and container are often confused terms. One reason for this is they can share the same name, such as Mpeg4.



Put simply, the container is a way of packaging together the audio and video in a single file. Think of it like a Zip file, which can hold several files of different formats. Examples of containers include .MP4, .MKV, .AVI, .MOV, .OGG and .ASF.

Codec: Within a video container is an audio file and a video file. A codec describes the method by which each has been compressed.

For example, an .AVI container might contain DivX video and MP3 audio files. An .MP4 file might contain Mpeg4 video and AAC audio. One of the most popular containers is .MKV, which can include H.264 video and AAC audio.

For the vast majority of uses, including on Android and iOS devices, the H.264 (also known as Mpeg4 AVC, not plain Mpeg4) is the most efficient, offering the best image quality for the smallest file size. Video converters sometimes refer to H.264 as x264. MP3 is the most popular audio format, but if you have an iDevice you'll use AAC.

Bitrate: The video and audio within a container file have their own bitrates. Bitrate is a measurement of the number of bits that are transmitted over a set period of time. The more bits in your video, the higher quality the image.

For video, bitrate is usually expressed in megabits per second (Mbps). Blu-ray discs typically have a bitrate of between 20- and 30Mbps. That's way too high for a smartphone or tablet, which can get away with perhaps only 2- to 5Mbps.

Bitrate is related to file size – you can calculate the expected file size by multiplying the bitrate by the video's duration. Don't forget to add the bitrate and duration of the audio. Audio bitrate is much less than video, and is typically less than 320 kilobits per second (Kbps). 1Mbps is equal to 1,000Kbps.

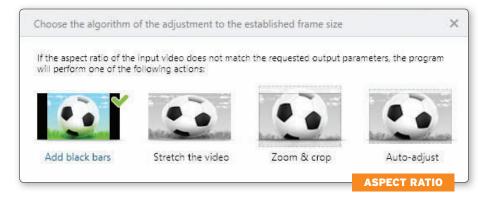
You'll have to experiment with bitrate to find the optimum setting for your device. Set it too low and you'll end up with a small file, but with poor quality - particularly evident when there's a lot of movement onscreen.

Constant vs variable bitrate: Making matters more complicated, you can opt for a fixed or variable bitrate. With variable bitrate, you may (or may not, depending on your video converter) be able to set a minimum and maximum bitrate. The encoder then tries to compress the video as efficiently as possible, using the minimum bitrate when there's little or no movement, and the maximum when there's movement in the entire frame.

The advantage is that you should get better-quality video with a smaller file size, but variable bitrate isn't usually the best option if you're streaming the video across the internet.

Fixed bitrate means the bitrate is constant throughout the video. This usually gives smoother playback, but will result in a larger video file.

You may have to experiment to see what works best on the device on which you're playing the video. If you're unsure about the video specifications for your device, look in the user manual or search online.





YOUR QUESTIONS ANSWERED

Expert computing advice

We tackle readers' hardware and software conundrums

PROTECT MY E-BOOK

I've written a book, now in its fourth edition, called *Motoring in Spain*.

I will have it printed as usual, but I'm also considering producing a digital version. If I decide to take that route, I need to know whether it's possible to copy-protect the book, and if all e-readers can support its colour content.

Although popular tablets and smartphones are able to display colour e-books, these are often read on black-and-white devices such as Amazon's Kindle range, all of which use E Ink screens. You would be wise to avoid the use of colour diagrams if you want your book to be legible on such devices.

Although you can put in place simple measures to discourage the practice, given enough time and effort all e-books can be copied. Even printed books have been scanned page-by-page and made available for download on peer-to-peer networks.

What's important in this case is whether producing your work as an e-book will be profitable despite this risk.

All major e-book formats incorporate some form of digital rights management,





which will dissuade most people from making illicit copies. If your book is worth reading, there will always be those prepared to circumvent such measures to copy it - but not all these copies will amount to a lost sale: many of those who might out of curiosity download a copy are not likely to have paid for the book in the first place.

Appropriately pricing your e-book will also affect whether it's copied. A low price should result in fewer illicit copies and could result in a larger financial return.

If you want to publish your e-book on Amazon, take a look at Kindle Direct Publishing (kdp.amazon.com). If you'd like it to be available in Apple's iBookstore, you can start with a bookstore aggregator such as Lulu (lulu.com) or Smashwords (smashwords.com). These aggregators can get your book published on multiple sites in return for a cut of the profits.

MADDENING MONITOR MESSAGE

I'm having trouble with my Phillips 170B6CS/10 monitor. A message keeps flashing up onscreen that states 'OSD is now locked' or 'OSD is now unlocked'. I have tried everything I can think of to stop this, all to no avail. Please can you help? The messages you're seeing relate to a feature designed to disable or enable the control buttons on the front of the monitor. If this is happening without you pressing any buttons, it could point to an internal hardware problem with the monitor, or simply a sticky control button.

Some monitors let you adjust their settings via a desktop utility. It's possible that such a utility may be controlling this feature of your monitor in response to a particular key combination. Your 170B6CS/10 uses a utility called FP Adjust, so have a look to see whether you have that installed.

You might like to try plugging the monitor into a different PC to see whether the problem persists. If the same issue occurs on a different PC, it would suggest a problem within the monitor itself. If the problem happens only on the original PC then it could be a software issue.

ROWDY FANS

My PC is usually quiet, but it has recently begun making a horrible scraping and whirring noise. I have traced this to the fan on my CPU cooler, a Thermalright MUX-120. Can I replace the fan without having to buy an expensive new cooler?



Yes, you can. Unlike most stock processor coolers the Thermalright MUX-120 is designed to use a standard 120mm fan, which is attached to the heatsink with a pair of clips. Thermalright offers a selection of 120mm fans on its website, although not the particular model for your cooler. It may be worth contacting the firm to ask which fan is the appropriate replacement.

Alternatively, you could buy a compatible fan of your own choice and simply clip it to the heatsink using the existing clips. To match the performance of the original fan, you will need to look for a replacement 120mm model that delivers at least 41.8cfm of airflow; if you want it to be just as quiet, look for a noise level of 23.5dBA or lower.

Any other readers who are suffering a noisy PC should check their fans. A noisy fan is unlikely to provide adequate cooling and may result in costly system failure if the components are allowed to overheat, particularly the processor.

Replacing the case fans is usually easy; they generally come in standard sizes and are simple to swap out. If you check your fan for a part number, you should be able



to find the full specification online and find an inexpensive equivalent.

Make sure the power connector matches that of your original fan. You'll often find a quieter fan is available as an upgrade, which can make a big difference to the overall amount of noise created by the PC. Quiet PC is a good place to begin your search.

Most PC owners who have a failing CPU cooler fan won't be so lucky, since the fan is often a custom-designed part of the cooler, meaning the entire unit must be replaced.

This can be a more complicated procedure than just replacing the fan. However, with many standard CPU coolers you can buy an identical replacement, then remove and fit to your existing heatsink the new fan.

ADDING USB 3.0 TO A PC

My PC is built into a Cooler Master Cosmos system case, which I love. However, in pulling out a nearby desk drawer I accidentally broke all the front-facing USB 2.0 ports. I'd like to

Continues >>

PREVENT IN-APP PURCHASES ON A MOBILE DEVICE

Many free-to-download apps offer additional features that are paid for within the app itself. By avoiding the app store's checkout system, they can remove the need to enter a password or PIN to complete the payment. Such in-app purchases can often be found within games, which allow the player to advance more quickly by spending real money to buy power-ups.

You may think your child is innocently playing a free game, but they could be running up a large bill on your credit card. Indeed, four-figure sums have been reported in the news.

Thankfully, you can prevent such mishaps by making some adjustments to your security settings.

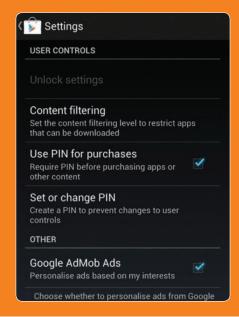
If you have an iOS device, such as an iPhone or iPad, you can enable a variety

of restrictions, including the ability to disable in-app purchases.

Go to Settings, General, Restrictions and select Enable Restrictions. You will be prompted to enter a passcode to lock down these settings. Next, scroll down and switch 'In-App Purchases' to Off. Turn to page 120 for further advice.

If you're using Android, you can protect all purchases via a PIN. Launch the Google Play app, then bring up the Settings menu. Open User Controls and select 'Set or Change PIN'. You will be prompted to enter a PIN that will prevent changes to your user controls.

A new option 'Use PIN for purchases' will appear. Checking this box will require the PIN to be entered before any purchases can be made, whether that's within Google Play or an app.





add some new USB ports (although preferably a little lower down the front of the case to prevent a repeat of this incident). I recently bought a USB 3.0 hard drive, but my motherboard doesn't have a compatible connection. Is it possible to add USB 3.0 ports without running wires in and out the case?

This is possible, provided that you have a spare PCI Express slot on your motherboard and an external 3.5in drive bay. The first job is to add USB 3.0 support to your PC, which can be achieved by plugging in a PCI Express USB 3.0 adaptor.

Most such adaptors will provide a pair of USB 3.0 ports at the rear of your PC, but shop around and you should find some that provide internal ports. Better still, some adaptors allow you to have a pair of USB 3.0 ports at the back of the machine and internally route a couple more to the front.

Next, you will need a USB 3.0 front panel adaptor that fits into your spare 3.5in drive bay. This will come with cables that plug into the internal ports on your USB 3.0 card.

Be aware that not all PCI Express USB 3.0 cards use the same internal connectors. Some will use one normal external USB connector per socket, while others will use a single standard internal USB 3.0 connector. You will need to make sure that the font panel adaptor comes with cables that fit your USB 3.0 card, or buy the card and the adaptor together as a kit. Some examples include SilverStone's £25 ECO3S and DeLock's £30 USB 3.0 Front Panel adaptor.

If your motherboard already supports USB 3.0, you may already have an available

internal USB 3.0 connector; you will simply require a front panel adaptor that uses the correct type of connector.

Similarly, if you have a modern case with a front-facing USB 3.0 port, but your motherboard doesn't support the standard, you can buy a USB 3.0 card with an internal connector that matches the cabling supplied inside your case.

PROBLEM WITH WHITES

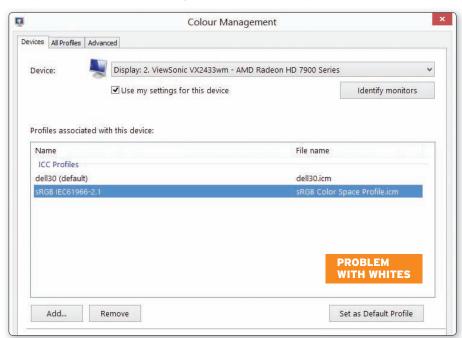
My Lenovo G570 laptop runs both Intel and AMD graphics. When I attach an external monitor (a Samsung SyncMaster 2232BW) via HDMI, I find that in some apps whites are displayed as yellow. For example, if I use Windows 7's Image Previewer, the background is yellow rather than of white. In a web browser or email client the whites display normally, so I know it isn't the monitor at fault. Any ideas on how to fix this, please?

The fact that some applications display colour differently to others makes this sound as though it's most likely a Windows colour-management issue. Windows allows you to profile your display to achieve more accurate colour reproduction, and many monitors supply drivers that include such a colour profile.

However, not all applications are able to make use of the Windows colourmanagement engine, and those that don't will assume your display conforms to the sRGB standard. This is usually a pretty good guess for most modern monitors.

There are also different types of colour management profile: International Color Consortium (ICC) v2 and v4. Some apps will support v2 profiles, but not v4, so not all applications will be able to make use of it if you have a v4 colour profile installed. This could explain why you're seeing varying results in different applications.

In your case we suggest reinstalling any drivers that may have come with your display or your laptop, and checking the colour settings in the Catalyst Control Center. You'll find the setting under 'Display Color (Digital





Flat-Panel)'. Make sure all the sliders are in the middle position, and that the 'Color Temperature Control' is set to 6,500k.

If the problem persists, open the Colour Management settings in the Windows Control Panel. This should show you a list of profiles associated with your display. Try removing any entries here that don't correspond to your laptop or sRGB. You can also test whether your web browser supports colour management by heading to tinyurl.com/brsh89n.

Finally, try switching from Intel to AMD graphics (or vice versa) when you open the Windows Image Previewer to see whether this fixes the issue.

READER TIP: CHECK YOUR POWER SUPPLY

If your PC has been behaving erratically, you may benefit from this handy tip from *PC Advisor* reader Andy Scott.

"If your PC sometimes works fine, but intermittently displays the 'Blue Screen of Death' (BSoD), it's worth checking the PC's power supply unit (PSU). Some low-cost PCs come with cheap PSUs that can just about support the installed hardware. If you upgrade your equipment with an extra hard disk drive, a better graphics card, a new DVD drive or more memory than the PSU can handle, it may start to fail.

"Dust build-up can also reduce the life of the PSU. Symptoms are usually intermittent, and include unexpected reboots, startup failures, USB device failures, and hard-disk or memory errors. These issues often mysteriously fix themselves, only to return later.

"These errors can be more frequent when you're doing something that requires more power than is normal, and they will usually become progressively worse until the PC eventually fails to boot altogether.

"The solution is simple: replace the PSU with one that can cope with the power requirements of your installed components. If the case is reasonably well-designed then you can simply take out the old PSU and slide in a new one, although it can be tricky

Continues >>

TECH JARGON BUSTER

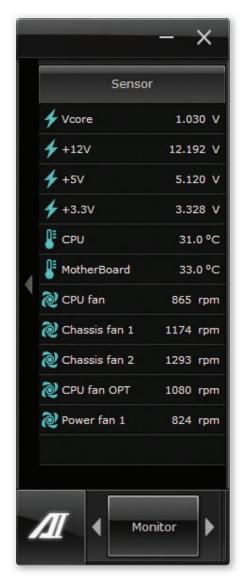
E-book aggregator: Such services act as middle man between an author and an e-book store. They can offer a more convenient way for an author to publish to multiple stores, and often offer additional services, such as cover design and layout. They will charge an upfront fee or take a cut from any sales.

UASP: USB Attached SCSI Protocol is a more efficient technology for the transfer of data over a USB connection. Although USB 3.0 is much faster than USB 2.0, its full performance cannot be unleashed without also upgrading the existing data transfer protocol, known as Bulk-Only Transport (BOT).

Most USB 3.0 devices will operate using BOT unless specific drivers are installed and UAS compatible hardware is used at each end of the connection. Some vendors, such as Asus, have released UASP drivers for Windows 7; full native OS support was introduced with Windows 8.

Botnet: A network of computers that have been infected with malware that allows them to be remotely controlled without the knowledge of their owner. Botnets become powerful distributed computing platforms capable of co-ordinated attacks against websites, sending spam and enabling large-scale identity theft. It's important to keep your security software up-to-date to safeguard your machine from being co-opted into a botnet.

Google Nexus: A Google-branded mobile phone or tablet running the Android platform. The hardware is manufactured by various OEMs, including LG (Nexus 4), Asus (Nexus 7) and Samsung (Nexus 10). Unlike the majority of Android devices, Nexus runs a vanilla copy of Android that hasn't been customised by hardware manufacturers or mobile operators. Nexus devices are designed to make it easier for developers to install their own modified versions of Android and are the first to receive new versions of the mobile OS upon release by Google.



if there isn't much room inside the case. Make sure your new PSU has enough connectors for all your hardware."

Thanks for the tip, Andy. We've traced all sorts of strange problems down to faulty PSUs, and it's a component that's all too

CHECK YOUR **POWER SUPPLY**

easy to overlook when diagnosing problems. For example, one particular motherboard we were testing refused to boot unless a graphics card was plugged in, even when using its integrated graphics. Replacing the PSU fixed this problem.

A decent PSU can also go some way to silence your computer, thanks to higher-quality and quieter fans.

Graphics card upgrades can be one of the biggest causes of PSU problems as they can draw a large amount of power. Be sure to research online to find out your card's requirements before installation.

Sometimes software tools can help you to diagnose a problem with your PSU. These are often bundled along with your motherboard or available as a free download from the motherboard vendor.

Asus, for example, provides a tool that reports the voltages being supplied to the motherboard. There should be at least +12V, +5V and +3.3V inputs, along with their actual measured voltages. If any of these values strays too far from its intended value, you probably have a PSU issue. For example, if your +5V line is measured at only +4.5V, your PSU isn't delivering power as it should.

Be warned that replacing a PSU is rarely as simple as sliding in a new one. There will be many cables to disconnect - at least one to each system component and probably two to the motherboard. Some, or all, could also be clipped into place with cable ties. Each component will, of course, have to be reconnected to the new PSU.

CONTACT US



Email your Helproom questions to 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

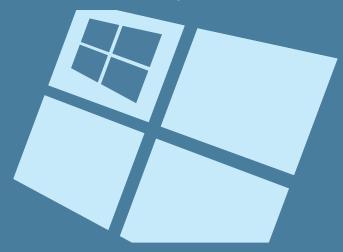
NEW PC ADVISOR APP DOWNLOAD IT FOR FREE TODAY!



Run another operating system inside Windows



Instead of dual-booting two OSes, why not try running one inside a virtual machine? Mike Bedford explains how to do this, as well as emulating older PCs for fun



While most of us regularly use Windows 7 or Vista with barely a thought for the alternatives, the world of operating systems is rich and varied. There's a lot of functionality on which you're probably missing out, but this needn't be the case.

Computers aren't limited to one OS per machine. You can install multiple OSes in separate partitions of the hard drive, then choose which to load at bootup. Configuring such a setup can be tricky for the uninitiated, though, and switching between OSes demands a restart. Virtualising or emulating another OS is a simpler solution.

Virtualisation involves creating a software model of a PC's hardware, in which you can run a 'guest' OS. This second operating system is independent from the host OS, but it's easy to swap and share files between the two.

One thing a virtualisation package doesn't model in software is the processor. This means the guest OS must use the host PC's CPU. That's fine, provided it's supported.

With older computers, such as the BBC Micro and ZX Spectrum, it's necessary to use emulation.

Emulation involves modelling the computer's entire hardware specification, processor and all. This method is often used to bring back to life old computers and games consoles.

If you've been using computers for longer than you care to remember, emulation software can offer a trip down memory lane; alternatively, it provides a means of learning about the early days of computing.

Unlike virtualisation packages, which allow you to run any compatible OS, emulators tend to recreate a single machine and its OS or, perhaps, a family of computers. Because emulation involves translating every processor instruction, it's an inherently slow method. Given that it's used to recreate old (and therefore slow) computers, however, it's more than fast enough on modern hardware. Turn to page 113 to get started.

VIRTUALISE WINDOWS

There are several reasons to virtualise an older version of Windows than the one your machine is running. For example, if you still have software than ran under XP, but won't work under Windows 7, running XP on a virtual PC (so long as you still have the installation CDs) provides a solution. Some people also choose to run two copies of the same Windows version, with either one or both virtualised to separate their personal and work systems and prevent a potential virus attack from damaging both installations.

Here, we explain how to run the trial version of Windows 8 as a virtual PC. (You can download it from tinyurl.com/8LatLd3.) This lets you experiment with Windows 8 without messing with your current OS; when the 90-day trial expires, you can revert to your current Windows version or upgrade to Windows 8.

We're using the free Oracle VM VirtualBox, which you can download from virtualbox.org. Install this software on your computer before continuing with this workshop.



Step 1. Start VM VirtualBox. The left part of the window is initially blank: this is where your virtual PCs will be listed, but you haven't created any yet. Click the New icon and the 'Create Virtual Machine' dialog will appear. Enter Windows 8 as the name of your virtual PC and you'll notice that Type and Version update accordingly. Click Next.



Step 2. The following dialog box will ask how much memory it should allocate to the virtual machine. Accept the default by clicking Next.



Step 3. You'll be given various options for your virtual machine's hard drive. We suggest you accept the default value, this time by clicking Create.



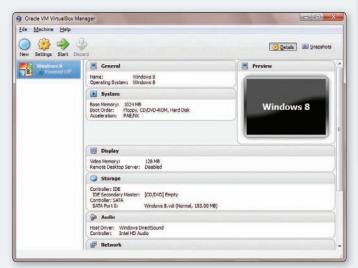
Step 4. VirtualBox will ask what file format it should use to define your virtual machine. Accept the default VDI format by clicking Next.



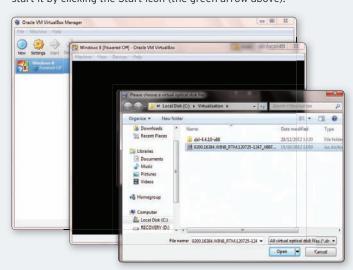


Step 5. The next dialog asks whether the virtual hard drive should be allowed to grow as it is used. Accept the default by clicking Next.

Step 6. Enter a name for the virtual hard drive. Click Create to accept the default of a 25GB hard drive.



Step 7. Your virtual PC will now be created, with your chosen name 'Windows 8' appearing in the left pane and its details shown to the right. You'll notice that your Windows 8 virtual PC is 'Powered Off'; start it by clicking the Start icon (the green arrow above).



Step 8. A second window appears – this is the screen of your virtual machine. If any information or error boxes also appear, click Ok. Since your virtual machine has no operating system installed, a dialog box will appear asking from what it should boot. We'll be booting from the disk image of the Windows 8 trial.

Step 9. Click the folder icon to the right of 'Host Drive E', navigate to the Windows 8 trial file you downloaded, select it and click Open. Return to the 'Select start-up disk' dialog and click Start. Various error and/or information messages may appear; in most cases you can simply accept these.



Step 10. The Windows 8 installation will begin. Follow the prompts as you would with a standard Windows installation. On the first page, for example, select 'English (United Kingdom)' as the Time and currency format, and 'United Kingdom' as the Keyboard or input method language.

Step 11. During the installation you'll be asked whether to do an Upgrade or Custom installation. Because your virtual machine had no previous version of Windows preinstalled, only the Custom option is applicable. Soon after this, the message 'Installing Windows' appears. Now would be a good time to put on the kettle.



Step 12. Eventually, having completed each step of Windows 8's installation routine, the Windows 8 Start screen will appear. You can now try out the latest version of Windows, and use it exactly as if it were a physical Windows computer.

Step 13. When you've finished experimenting with your new Windows installation, select Close from VM VirtualBox's Machine menu. This will close your virtual machine, just as if you were shutting down a physical machine running Windows 8. All your settings and files will be saved for next time you start up this Windows 8 virtual machine. ⊠

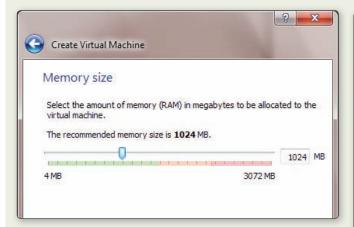
VIRTUALISE LINUX WITHIN WINDOWS

When you install Windows 8 on a VirtualBox virtual PC, VirtualBox creates a file that defines your virtual PC, its files, Windows installation and all. Technically, but not legally, you could give that VirtualBox file to someone else who would be able to run Windows 8 in their VirtualBox without first having to carry out the Windows installation.

Some free operating systems, mostly Linux variants, are distributed this way. We're going to use one of those to see how easy this approach makes it to try out (or even use for real) Linux within VirtualBox. Here, we're using Damn Small Linux (DSL) which, as the name suggests, is a cut-down version for quick downloads.



Step 1. Go to virtualboxes.org/images/damn-small to find VirtualBox virtual machines for several versions of DSL. Download the latest version, which is a Zip archive, then extract the files it contains. You'll get two folders called Machines and VDI, the latter of which contains the virtual machine file.



Step 2. Start up VM VirtualBox and, in the main window, click the Create icon, just as you did to create the Windows 8 virtual machine in the previous workshop. Enter DSL as the name of your new virtual machine, and you'll notice that Type and Version update accordingly. Click Next.

Step 3. In the next dialog box you'll be asked how much memory it should allocate to the virtual machine. You can simply accept the default by clicking Next.



Step 4. Next, you'll be given several options regarding the virtual hard disk. Select 'Use an existing virtual hard drive', click the folder icon to its right, then select the VDI file that you downloaded from the web and click Open. Return to the 'Create Virtual Machine' dialog box and click Create.

Step 5. Your virtual machine will now be created. The 'DSL' name you specified in Step 2 will appear in the left pane of the main window, with its details shown to the right. You'll notice that the DSL virtual machine is shown as 'Powered Off'; start it by clicking the Start icon (the green arrow above).

Step 6. A second window will appear, which is the screen of your virtual machine. Accept any error and information boxes that pop up onscreen. DSL will start and you'll be asked to login. Do so using the username 'dsl' and the password 'reverse'.



Step 7. The DSL start screen will appear, just as if you'd installed the operating system on your PC's hard disk. You can explore the operating system just as if this were the real thing. When you've finished experimenting with DSL, select Close from VM VirtualBox's Machine menu to shut down the virtual machine. All your settings and files will be saved for the next time you start up this virtual machine. ⊠

EMULATE THE BBC MICRO

You'll be using emulation rather than virtualisation to run programs for computers that are no longer available. For example, you can emulate the BBC Micro, which was extremely popular as a home computer back in the early 80s.

The emulator we're using is BeebEM (mkw.me.uk/beebem). This software emulates the BBC Micro's hardware, including its 6502 processor. It also includes the ROM-based software (roughly equivalent to both a PC's Bios and its OS), since the BBC Micro could be used without a disk drive. Technically, the inclusion of this software is illegal, but we'd have to question whether the copyright holder would enforce their rights over 30-year-old software.

Step 1. Run BeebEm. A window will show the BBC Micro's startup page. The introductory text shows that the BBC Micro had 32kb of memory and ran the Basic programming language.



Step 2. Enter and run a very simple Basic program. Type 10 FOR N=1 TO 10 on the first line and press the Enter key, then type 20 PRINT "HELLO WORLD" on the second, and 30 NEXT N on the third. To execute the program type RUN.

Step 3. Load a program from the BBC Micro's emulated floppy disk drive. Click Run Disc in the File menu, then select games.ssd and click Open. A colour menu will offer four games.



Step 4. Enter 4 to experience the wonders of Cylon Attack. After this quick introduction, if you want to learn more about the BBC Micro, which was a groundbreaking machine in its day, download the BBC Micro's user manual from tinyurl.com/aeyzhwf. ⊠

EMULATE THE ZX SPECTRUM

The second old computer we'll emulate is the Sinclair ZX Spectrum, another hugely popular home computer in the early 80s. The Spectrum's colour display set it apart from Sinclair's earlier home PCs, the ZX80 and ZX81.

You'll need the Spectaculator 8 emulator (speculator.com). This is a 30-day trial version; registration costs £9.99 thereafter. Alternatively, several free emulators exist.

Step 1. Run Spectaculator and two windows will appear. The main window shows the Spectrum's screen; the second is a dialog box that asks what you want to do. Select 'Go to ZX Spectrum Basic'. The Spectrum's emulated screen will clear and a copyright notice will appear at the bottom.



Step 2. Enter a Basic program; the screenshot (left) shows how it should look. On the first line press F to enter FOR; Left-Shift, N for the N; and Right-Shift, F, for TO. On the second line use P for PRINT; Left-Shift, N for the N. On the third line use N for NEXT; and Left-Shift, N for the N.

Step 3. Press R to enter RUN, then press the Enter key. The Basic program will be executed and the numbers one to 10 will be displayed onscreen.

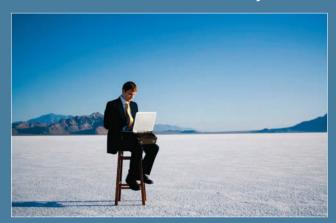


Step 4. Run one of the games distributed with Spectaculator. Select Open in the File menu, choose Dynamite Dan.tzx and click Open. After the opening screen a menu is displayed. Press I to see the instructions, then try to thwart the dastardly Dr Blitzen and his glamorous assistant Donna. An extensive Help section can teach you more about the ZX Spectrum. ⊠

Remote computer troubleshooting



Being the family computer expert can quickly become a chore when they're scattered all over the UK. Sandra Vogel demonstrates troubleshooting from afar



If you've got even a modicum of computer knowledge, chances are you'll have been asked by friends or family members to fix their computer problems. It's flattering, yes, but also a source of frustration - you'll need to travel to their home in your own time and at your own expense, and if you successfully fix the problem you'll be rewarded with the certain knowledge that you'll again be called upon the next time something goes wrong. You're happy to help, but even us tech geeks have better things to do.

Thankfully, there are things you can do to alleviate this frustration. If Uncle Fred lives 200 miles away, and you're going around in circles trying to troubleshoot his PC problem over the phone, you can employ remoteaccess software to control his computer from afar.

Provided Uncle Fred's PC is connected to the internet, a screen-sharing tool such as LogMeln's free join.me lets you do away with that 400-mile round trip. You can see and interact with his PC from your own machine.

Remote access is possible only when Windows will boot, but this includes plenty of scope to fix issues as well as prevent problems. You can ensure everything is up to date, from antivirus to drivers and even Windows itself, plus download and install new software if required. In fact, save for cleaning dust from the cooling fans and physically powering on the PC, you can do almost anything you'd be able to do if you were sitting in front of the PC.

Here, we'll show you how to use join.me to fix Uncle Fred's troublesome PC. Provided free by LogMeIn, one of the original players in the remote-access game, join.me is also a useful tool for conducting online meetings, in which multiple participants can view a single person's screen (see join.me on the iPad, right, for more).

Using a simple code, it's easy to gain access to another person's computer (with their permission). No configuration is required, and all the software you need is automatically downloaded when you click the share or join buttons at join.me's site.

FIX PC PROBLEMS FROM AFAR WITH LOGMEIN JOIN.ME



TART

Ask Uncle Fred to check his PC is connected to the web and browse to join.me. Head to the same site on your own PC. Fred should click Basic (under share), then click the orange arrow button to get started with the free version of LogMeln join.me.



A new browser window revealing Fred's desktop will open on your PC. Request control of his PC by clicking the mouse icon in the floating control bar. Fred will be prompted to authorise access with the request 'Can Viewer 1 have control?', to which he should click Yes.

JOIN.ME ON THE IPAD

A version of join.me is available for the iPad, but its functionality is limited to participating in multiscreen meetings. You will need to be invited to join a meeting by the host, and can then see what's on their screen. You won't have remote control of this PC, though.

The paid-for version of join.me lets you deliver information from your iPad to other participants of a join.me session. This is most likely to be useful in a work scenario in which you want to share a presentation or document with remote colleagues. If you work from home or are away from your main office and need to share information with colleagues, this could be invaluable.





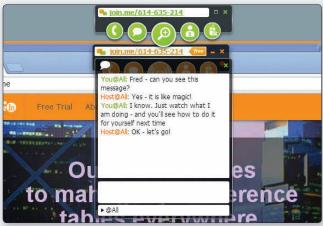
A file will be downloaded to the Downloads folder on Fred's PC. It might be useful to copy this file (or create a shortcut) to the Desktop so he can quickly access it next time he needs your help. Tell him to double-click the file, which will produce a nine-digit login code.



Fred will need to give you this nine-digit code, which you should enter into the empty field under join. The hyphens are automatically inserted. Now click the green arrow to start the connection process.



Fred can now watch you troubleshoot his PC. You can run programs, open web pages, alter settings and even use the keyboard to enter text. Fred can continue to work on the PC at the same time, but ask him to refrain from doing so.



The speech bubble icon on the control panel lets you send and receive instant messages, allowing you to end your phone call. You can also use the zoom tool to get a closer look at certain items. When you've finished, click the mouse icon. $\ensuremath{\boxtimes}$

You can also use join.me on an iPhone or iPod touch, but not through their Safari web browser. Instead, you'll need to enter the App Store and download the free join.me app.

Splashtop 2 - Remote Desktop

If you want an iPad app that provides remote control over a Windows PC, look instead to Splashtop 2 - Remote Desktop. The connection is surprisingly fast - quick enough even to play games, complete with sound. Use a Bluetooth keyboard if you don't want to obscure most of the iPad's screen with the onscreen keyboard.



Store photos in the cloud for free



Your digital photos are irreplaceable; protect them before disaster strikes. Martyn Casserly explains how to store your digital photos in the cloud



Very little data is considered to be as valuable as the digital photos that hold memories of your once-in-a-lifetime events; these snaps are irreplaceable. It's crucial that you back them up.

Burning a backup copy to disc will be helpful if your PC is stolen or your hard disk crashes, but fire and flood damage still threaten your data. To truly safeguard your snaps, you need an offsite copy. Thankfully, there are plenty of affordable options for backing up to the cloud.

Flickr has long been a popular site for storing and sharing photos. Membership is free, and you can upload 300MB of photos every month. But if you don't pay for an unlimited Pro account (£16 per year), you'll be able to view only your last 200 uploads (the rest will be safely stored, just not visible).

You may also have heard of Photobucket and Smugmug, which offer similar services. But if your needs don't require a photo-specific service (and your library is of a modest size), the various free storage options offered by Dropbox, SkyDrive, Box, Amazon Cloud

Drive and Google Drive can add peace of mind.

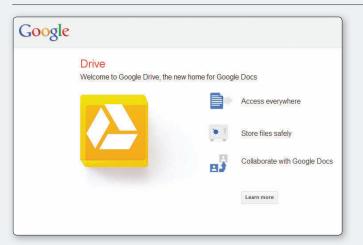
Many of these services offer up to 5GB of free online storage; given that most images captured by a compact camera or smartphone are around 2- to 3MB, this would allow you space for around 2,000 and still leave room for a few documents. You'll also be able to access your photos wherever you have an active internet connection.

Of course, you could take advantage of multiple cloud services for additional peace of mind and/or storage.

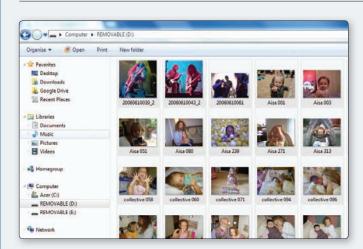
Given that most people already have a Google account, in the following workshop we explain how to back up your precious images to Google's free Drive storage service.

A word of warning before you begin: make sure you copy - rather than move your photos into the Google Drive folder, even though this means creating duplicate copies on your hard disk. Because Google Drive mirrors the folder on your hard drive, accidentally deleting an image from the PC will also delete it from the cloud.

GET STARTED WITH GOOGLE DRIVE



Head to google.com/drive and log in with the same account details you use for YouTube, Gmail, Calendar and any other Google services you use. If you don't already have a free Google account you can sign up for one now.



Once your Drive folder has been synchronised with Google's servers, a message will tell you it's okay to start moving your files. Google Drive will appear as a standard system folder in Explorer; you can simply drag or, better still, copy into this your photos.

SYNC YOUR PHONE DATA

Many people now use their smartphone as their primary camera. An advantage of this is that several services have free mobile apps that let you automatically upload your photos to the cloud. One such app is Dropbox, available for iOS and Android.

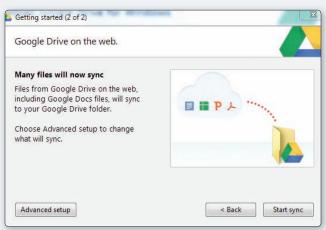
To set up this very useful feature visit dropbox.com and sign up for a free account. You'll be given a complimentary 2GB to start with, but you can earn more space by recommending the service to friends or on social networks.

Signing up to the synching photos online option nets you an additional 3GB of free storage, which will be ample space in which

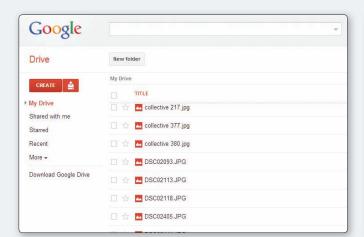




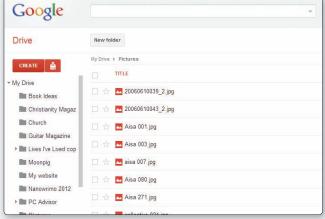
Google Drive lists all the files you have stored online. We need to download the desktop app to sync Drive with our PC. Look in the left column for a link to 'Download Google Drive'; click this, accept the terms and conditions, then install Google Drive.



Sign into Drive when prompted, then click Start Sync when the option appears. From now on, any files stored in the Google Drive folder on your hard drive will be synchronised with Google's cloud servers. You can work with them on- or offline.



It may be worth creating a Pictures folder within Google Drive to keep things organised. Right-click as you would in any Windows folder, then choose New, Folder. You can also create subfolders within this folder.



Any files placed in the local folder will automatically sync with the online version. This may take some time if you've got lots of photos. Monitor the progress by clicking on the Drive logo in the taskbar or accessing Drive through a web browser.

to store a healthy quantity of snaps. Now, simply download the app to your smartphone, turn on photo synching (being sure to set the preferences to upload photos over Wi-Fi only, thus avoiding a nasty shock when your next bill arrives), and you're done. Each time you take a photo on your smartphone it will be marked for upload when you are next within range of a Wi-Fi connection.

If you install Dropbox on your PC, Mac or Linux machine (one of the reasons we love Dropbox is the platform neutral nature of the service), the photos will also appear there automatically, meaning you can have multiple copies on different servers and devices.



Create and edit your documents on an iPad



The iPad can be a decent productivity tool when the right apps are installed. Sandra Vogel explains how to create and edit documents with Quickoffice Pro HD



How often do you use your iPad or iPad mini to work with documents, spreadsheets and/or presentations? If your answer is 'never', you could be missing a trick.

The iPad's onscreen keyboard is sufficiently large for typing; most people will get on fine even with the smaller version found on the mini. If you prefer to use a hardware keyboard, plenty of compatible models are available. Apple has its own Bluetooth keyboard cover, while Logitech, Adonit and others make cases with built-in keyboards.

If you lug about a laptop for sending email and editing documents on the move, consider switching it for an iPad. Apple's tablet is far more easily portable, being both lighter and smaller; it switches on in a jiffy, and offers excellent battery life. The iPad also performs a host of other functions, and has built-in Wi-Fi connectivity (3/4G is optional).

Look in the App Store and you'll find lots of productivity apps. Quickoffice Pro HD is one of our favourites. It's pricey for an app, at £13.99, but a bargain when compared to desktop software.

We like Quickoffice Pro HD because it's versatile, yet easy to use. It'll do as good a job in outlining a report as in writing the report itself. Quickoffice Pro HD is compatible with Microsoft Office, letting you create, view and edit Word, Excel and PowerPoint 2010 documents, and it supports the older .doc, .xls and .ppt file formats. You can save files as PDFs, too, and even print using AirPrint.

Other bonuses include a spellchecker and various fonts, support for tracking changes and Dropbox. The latter is extremely useful, allowing you to pop into your Dropbox an important document before you leave the office and continue working on it on the train journey home.

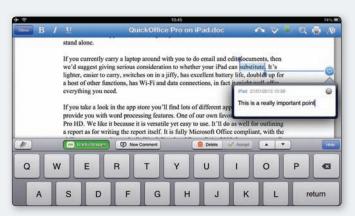
GET TO GRIPS WITH QUICKOFFICE PRO HD



Open the App Store and search for Quickoffice Pro HD. You should find it at the top of the list of search results, along with information about the app and a button to buy the software. Follow the prompts to install Quickoffice Pro HD.



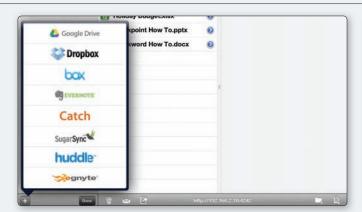
Tap the Dropbox or 'On iPad' icon, then use the centre pane to navigate folders. A frame on the right reveals subfolders and files; tap a file to open it in Quickoffice. Alternatively, to start a new document tap the New Document icon at the screen's bottom right.



Quickoffice supports Track Changes, which is called up by an icon that resembles lines of text. Use the select tool to comment on a specific part of a document, or tap track changes. Buttons let you accept or reject any changes made by others.



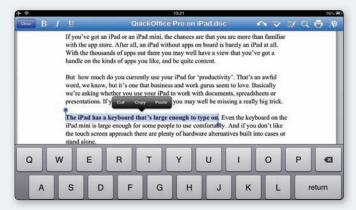




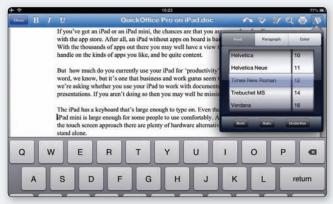
Assuming you already have a Dropbox account, you can add your account details to Quickoffice Pro HD by tapping the plus sign at the screen's bottom left and choosing Dropbox. Plenty of other popular services are listed here, too.



Enter your Dropbox login credentials when prompted, then tap Sign in. In the following screen tap Continue to access your Dropbox account. Your account will appear on the left side of the screen, below the 'On iPad' icon.



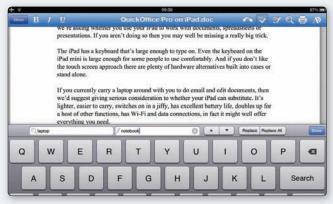
The main editing window is intuitive, with formatting options in the top row. To select some text you simply tap and hold on a word, then choose Select and drag the left and right bars to include the text you require. You can then cut, copy or paste the text.



Tap the Font icon in the top toolbar to customise the text's font and size. You can apply formatting to the remaining document or selected text only. Using this tool you can also set up bullet points and change the text colour.



If you're writing to a word count, use the magnifying glass icon in the top toolbar to get a quick rundown of the number of both words and characters within your document. Highlight some text to get a word count for a specific part of the document.



Find and replace can be an invaluable tool; access its toolbar using the magnifying glass icon. Next, simply enter into the first field the word you wish to find, and in the second field the word with which it should be replaced. oximes

Set up iTunes for your child



If you've bought your kids an iPod touch or iPad, you'll want to set it up so they can't go on an unexpected spending spree. Cliff Joseph explains how



The iPod touch, iPad and iPad mini are terrific all-in-one devices for playing music, video and games, getting online and enjoying a zillion other apps. No wonder they've been such popular Christmasand birthday gifts of late.

If it's a child who will be using the device, you'll probably configure it using your own iTunes account - complete with your own debit- or credit card details. App Store payments are password-protected, of course, preventing the child from buying apps without your permission.

One thing to watch out for, though, is 'freemium' games. These are free to download, but make money through in-app purchases. This might include the purchase of extra weapons or skills, for example.

By default, a 15-minute period follows the initial download of a game or app in which in-app purchases can be made without re-entering the password. You need to turn your back only a few moments for a child to get up to mischief; imagine what they can accomplish in 15 minutes. We've heard several tales of woe from parents who have downloaded free apps and later been surprised by huge bills run up by their children.

It's also worth considering that all the content you purchase for your child to enjoy will forever be linked to your own iTunes account. At some point, your small kids will become young adults, with their own spending money, and they'll want to manage their own media.

A solution to both problems is to set up an iTunes account for your child, without linking it to a creditor debit card. Money can be added to the account using iTunes vouchers, or you can give them a fixed monthly allowance. You can still keep an eye on what they're up to, too, since iOS lets you control app purchases and block certain downloads.

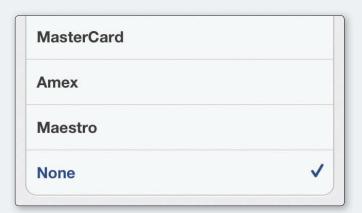
The following walkthrough will guide you through setting up an iTunes account and iOS device for your child.

SET UP AN ITUNES ACCOUNT & IOS DEVICE FOR YOUR CHILD



TART

Two stores are available on iOS devices: the iTunes Store for music and video, and the App Store for games and other apps. However, both are accessible using a single Apple ID, which is a combination of your email address and password.



You'll be prompted for your billing information. You won't want to link a credit card to your child's account, so select the option None - or, perhaps, start by giving your child a gift token for a specific amount of money.



You can now turn off options such as Installing Apps and iTunes, preventing your child from buying or downloading music or apps. For younger children you may also want to block the Safari browser to stop them browsing the web unsupervised.





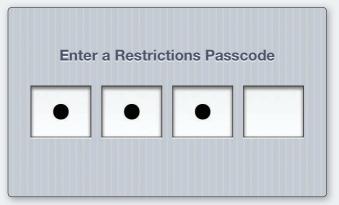
To create an Apple ID, open the App Store and find a free app, such as Apple's Find My iPhone. Tap the Free button to change the wording to 'Install', then tap it again. You will be prompted to enter your existing Apple ID or create a new one.



You'll need to provide an email address that will be linked to your child's Apple ID. You also need to set a password, and to provide answers to a set of questions - such as the name of a pet - for additional security.



Once you've created the Apple ID, tap the Settings icon on the device's Home screen, then tap General. Scroll down to Restrictions. This is set to 'Off' by default; tap Restrictions and select 'Enable Restrictions'.



You'll be prompted to enter a Passcode. Don't use the same code that is used to lock the device, which you will have to give to your child. The Restrictions Passcode will prevent your child from altering the settings, so keep it to yourself.



Scroll down to Allowed Content. The options here allow you to block music and podcasts that contain bad language, and apply age ratings to films and TV shows bought from the iTunes Store. There's also an option to turn off in-app purchases.



Return to the device's Home screen and you'll see that the icons for iTunes and the App Store have disappeared, preventing your child from accessing them. If you blocked Safari in Step 7 this icon will also have disappeared.



Abelssoft CleverPrint 2013

FULL PROGRAM AVAILABLE ONLY ON THE DISC+



Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files
214\Abelssoft
CleverPrint 2013
and open the file

Online registration required: follow the links during installation before 6 April 2013

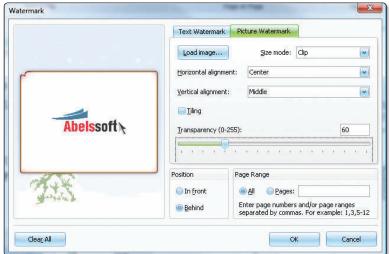
System requirements Windows XP/Vista/7; 512MB RAM; 1024x768 screen resolution; web connection CleverPrint 2013 can reduce your printing costs by up to 50 percent!

CleverPrint allows you to print more effectively. It lets you combine multiple pages on a single sheet, and exclude pages from the print job after checking the output in a preview window. You can also print to PNG, Jpeg and PDF, and automatically add a watermark or company letterhead.

Features

- Combine multiple pages on a single sheet
- Preview and cancel print jobs
- Add headers and footers, such as letterheads and watermarks
- Remove unnecessary pages from large print jobs
- Save print jobs for later use
- Re-arrange pages and print jobs
- Combine print jobs on a single sheet, even those from different applications
- Discover how much CO2, water, wood and energy you've saved ⊠





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Reallusion iClone 4 3D Movie Machine

FULL PROGRAM AVAILABLE ONLY ON THE DISC+

Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files
214\Reallusion iClone
4 3D Movie Machine
and open the file

Online registration required: head to tinyurl.com/apstnmz before 6 April 2013

System requirements

2GHz processor; Windows XP/Vista/7; 1GB RAM; 2GB hard-disk space; 1024x768 screen resolution; 32bit colour depth; DirectX 9; Shader Model 3.0 Real-time animation evolves with 3D video effects, motion paths, HDR and rapid drag-and-drop creation in iClone 4. This program introduces features that combine video production with 3D real-time animation. It's a powerful production tool for motion graphics, 3D animation and video compositing.

You can set up a production environment with fast drag-and-drop editing, onscreen object manipulation and advanced timeline keyframe animation. You can also customise actors, styles, scenery, props, vehicles, lighting, cameras and more with amazing body transformation, costume designs and material channel settings.

iClone's motion editing lets anyone animate and preview as they create. A 3D facial puppeteering panel is also incorporated.



REGISTRATION

REQUIRED

Grab your copy

Head to tinyurl.com/apstnmz and register with Reallusion. You will then be sent an email containing a download link for iClone 4. As a member you will also be entitled to a 40 percent discount on upgrades. ⊠

Steganos Safe 2012

FULL PROGRAM AVAILABLE ONLY ON THE DISC+

ONLINE REGISTRATION REQUIRED

Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files
214\Steganos Safe 2012
and open the file

Online registration required: follow the links during installation before 6 April 2013

System requirementsIntel Pentium processor;

Intel Pentium processor Windows XP/Vista/7/8; 1GB RAM; 200MB drive space Everything that's nobody else's business belongs in a safe. It's no different with your computer. Steganos Safe is your virtual vault. Whether it's business reports, family photos or your diary you need to protect, all are safe with Steganos Safe. It's child's play to use.

Imagine Steganos Safe as a normal folder that disappears at the click of a button. You can get to your sensitive data only by entering a password. The opened safe appears on your PC as a standard drive, accessible from any program. This means you can, for example, directly save Word documents to the safe.

Rather than using a password, the safe can also be opened with PicPass. With this you must click a series of images in sequence.

Steganos Safe not only encrypts your data, but can hide it in an image, music track or video to avoid unwanted attention.



You can use a USB stick as a to-go-medium for a portable safe, or even as a key to open your safe. Steganos Shredder is a bonus utility, able to securely delete files and folders from your PC. \boxtimes

The Cover disc is free with print issues of *PC Advisor* magazine, available in all good newsagents

Serif PanoramaPlus Starter Edition

FULL PROGRAM AVAILABLE ONLY ON THE DISC+

PHONE REGISTRATION REQUIRED

Installation details

Go to My Computer and open the disc. Select Files 214\Serif PanoramaPlus

Phone registration required: UK: 0800 376 5467; ROI: 1-800-646-515; US: 1-888-644-2766; International: +44 115 914 547. Quote the registration code and installation number within the program. If you're looking for a new way to enhance your photos and turn them into fantastic panoramic masterpieces, look no further than PanoramaPlus - the user-friendly photo-stitching software from Serif.

With PanoramaPlus, creating stunning panoramas is as easy as 1, 2, 3! Just Select the photos you want, then sit back as PanoramaPlus stitches them together to create a stunning panoramic masterpiece.

PanoramaPlus will produce a seamless masterpiece of which you can be proud. It's easy to zoom and scroll around your creation, then export it.



1-abc.net Backup 5

FULL PROGRAM

ONLINE REGISTRATION REQUIRED

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files 214\1-abc.net Backup and open the file

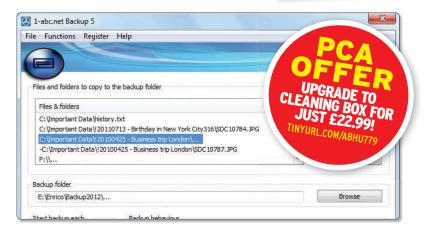
Online registration required: follow the links during installation before 6 April 2013

System requirements Windows XP/Vista/7/8

One of the most common PC problems people experience is loss of data. We're told to back up our data, but it's a time-consuming process. Many of us will skimp on the frequency of our backups, or on the number of files they include. But when something goes wrong, it's behaviour we'll regret.

Backup 5 is an easy-to-use program that automates the backup process. It isn't overloaded with rarely used tools that will slow down your PC, making the prospect of backing up seem less of a chore.

1-abc.net Backup lets you add as many files and folders as you wish



to a backup. You can schedule full and incremental backups down to the

minute, then simply let it get on with the hard work on your behalf. \boxtimes

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Place disc in drive. Open the file 'Click here to begin.pdf' for extra information.

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PC Advisor Cover Disc+

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ALL YOU NEED TO KNOW ABOUT WINDOWS 8





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Index

Ultraportable laptops130
£501-£1,000 laptops131
£1,001+ laptops132
Family PCs133
Media PCs134
Gaming PCs135
All-in-one PCs136
Tablets139
Smartphones139
Sub-£150 printers140
£151+ printers140
Blu-ray drives141
Wireless routers141
USB drives142
NAS drives142
Projectors143
Compact system cameras143
Sub-£150 graphics cards144
£151+ graphics cards144
Flat-panel displays145

Ultraportable laptops	PC ADVISOR SOLD	2 PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	PC ADVISOR BEST BLV	5
	Apple MacBook Air 13in	Apple MacBook Pro 13in Retina	Samsung 900X4C	Apple MacBook Air 11in	Acer Aspire S7-391
Price	£1249 inc VAT	£1,699 inc VAT	£950 inc VAT	£849 inc VAT	£1,200 inc VAT
Website	Apple.com/uk	Apple.com/uk	Samsung.com/uk	Apple.com/uk	Acer.co.uk
Build rating	****	****	***	****	****
Features rating	****	****	***	***	****
Performance rating	****	***	***	***	****
Value rating	****	***	***	***	***
Overall rating	***	***	***	***	***
Processor	1.8GHz Intel Core i5-3427U	2.5GHz Intel Core i5-3210M	1.7GHz Intel Core i5-3317U	1.7GHz Intel Core i5-3317U	1.7GHz Intel Core i5-3317U
RAM	4GB DDR3L	8GB DDR3L	8GB DDR3	4GB DDR3L	4GB DDR3
Storage	256GB SSD	256GB SSD	128GB SSD	64GB SSD	128GB SSD
Screen size	13.3in	13.3in	15in	11.6in	13.3in
Screen resolution	1440x900	2560x1600	1600x900	1366x768	1920x1080
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000
Video memory	N/A	N/A	N/A	N/A	N/A
Wireless	802.11a/b/g/n	802.11a/b/g/n	802.11a/b/g/n	802.11a/b/g/n	802.11b/g/n
Ethernet	Via adaptor only	Via adaptor only	Gigabit	Via adaptor only	×
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0	2x USB 3.0, 1x USB 2.0	2x USB 3.0	2x USB 3.0
FireWire	x	×	×	×	×
Thunderbolt	✓	√ (2)	×	✓	×
DisplayPort	✓	✓	×	✓	×
HDMI	×	✓	✓ (Micro HDMI)	×	✓ (Micro 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	N/A	N/A	N/A
Extras	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, backlit keyboard	Webcam	HD webcam, multitouch trackpad, backlit keyboard	HD webcam
Operating system	Mac OS X 10.8 Mountain Lion	Mac OS X 10.8 Mountain Lion	Windows 7 Home Prem 64bit	Mac OS X 10.8 Mountain Lion	Windows 8 Pro 64bit
Bundled software	iLife 11	iLife 11	Samsung Recovery Solution	iLife 11	None
Fear (Max detail)	29fps	29fps	28	28fps	23fps
Battery	50Wh lithium-ion	74Wh lithium-ion	62Wh lithium-ion	35Wh lithium-ion	Not specified
Battery life	8 hrs 20 mins	8 hrs 44 mins	8 hrs 3 mins	6 hrs 10 mins	Not tested
WB 6/PC Mark 7 score	132/4,497	Not tested/4,596	125/not tested	129/not tested	Not tested/4,581
Dimensions	325x227x4-17.5mm	313x219x19mm	375x237x15mm	300x192x3-17mm	323x223x12.5mm
Weight	1.34kg	1.64kg	1.67kg	1.07kg	1.28kg
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
Verdict	Decent turn of speed Stunning battery life Nice 256GB SSD Faster framerates Ultra quiet	Screen's pixel count has quadrupled Strong performance Fantastic battery life Limited future expansion	Sleek and stylish Good matt screen Comparatively fast Great battery life Lots of memory	 Reasonable price tag Very light and compact Strong performance for size Good graphics Great build quality 	Strong IPS touchscreen Incredibly thin Decent performance Frustrating trackpad Poor gaming speeds



Ultraportable laptops

Apple's MacBook Air sets the standard for thin-and-light laptops, which are usually referred to as Ultrabooks or ultraportable laptops.

Most run fast and silent SSDs for storage, which can partly explain their higher retail price, but some manufacturers are now fitting slim 7mm hard disks. All Ultrabooks run Intel CPUs (AMD variants are known as Sleekbooks), often a low-power version identifiable by its U suffix. The 1.7GHz Intel Core i5-3317U is a popular example.

Beware of cheap glossy panels with poor contrast and colour gamut and, if possible, judge in person the screen quality and viewing angles before you buy. Ports are limited due to space constraints, but look for built-in ethernet or dongles that allow full-size ports to be connected.

A smaller chassis means a smaller, often non-removable battery. Expect six-plus hours of life.

There's no room for an optical drive, but you can always connect an external USB version.
READ MORE: TINYURL.COM/CEAHEZK





£501-£1,000 laptops

If you're prepared to pay more than £500, you can get a laptop with a better selection of internal components, a higher-quality build, and faster performance.

Most laptops at this price have 15.6in widescreen displays, but beware of budget panels with a coarse resolution - 1366x768 pixels is wide, but creates fuzzy text and images. Look for anti-glare matt panels over glossy screens.

Intel introduced its third-gen Core chips in 2012, aka Ivy Bridge, which offer integrated GPUs capable of half-decent gameplay. You'll also find 2011's Sandy Bridge chips, identifiable by a leading 2 rather than 3 on the part number.

Battery life can stretch to six hours, but don't take it as a given.

Expect at least one USB 3.0 port, which allows for faster data transfer with compatible peripherals. Gigabit ethernet is now standard, and you may find even faster ports such as eSATA or Thunderbolt at this price.

Look for 4GB of RAM, and an SSD if you don't mind offloading media files to external storage. READ MORE: TINYURL.COM/BUHSEAR

£1,001+ laptops	PC ADVISOR OOLD	PC ADVISOR RECOMMENDED	3	4	5
	Apple MacBook Pro Retina	Alienware M14x	Alienware M17x	Chillblast Genesis 7970	Samsung Series 7 700G7C
Price	£1,799 inc VAT	£1,340 inc VAT	£1,799 inc VAT	£1,199 inc VAT	£1,400 inc VAT
Website	Apple.com/uk	Alienware.co.uk	Alienware.co.uk	Chillblast.com	Samsung.com/uk
Build rating	****	****	***	***	****
Features rating	****	***	***	***	***
Performance rating	****	****	****	***	***
Value rating	***	***	***	***	***
Overall rating	***	***	***	***	***
Processor	2.3GHz Intel Core i7-3615QM	2.7GHz Intel Core i7-3740QM	2.4GHz Intel Core i7-3630QM	2.7GHz Intel Core i7-3740QM	2.3GHz Intel Core i7-3610QM
RAM	8GB DDR3L	8GB DDR3	8GB DDR3	8GB DDR3	16GB DDR3
Storage	256GB SSD	500GB HDD + 32GB SSD	500GB HDD + 128GB SSD	750GB HDD/8GB SSD	1.5TB HDD
Screen size	15.4in	14.1in	17.3in	15.6in	17.3in
Screen resolution	2880x1800 pixels	1600x900 pixels	1920x1080	1920x1080	1920x1080 pixels
Graphics	nVidia 650M, Intel HD 4000	nVidia GeForce GT 650M	AMD Radeon HD 7970M	AMD Radeon HD 7970M	nVidia GeForce GTX 675M
Video memory	1GB	1GB	2GB	2GB	2GB
Wireless	802.11a/b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Via adaptor only	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0, 1x USB 2.0	4x USB 3.0	3x USB 3.0, 1x USB 2.0	2x USB 3.0, 2x USB 2.0
FireWire	×	×	×	×	×
Thunderbolt	√ (2)	×	×	×	×
DisplayPort	✓	✓	✓	✓	✓
HDMI	✓	✓	✓	✓	✓
DVI	×	×	×	✓	×
VGA	×	✓	✓	×	✓
eSATA	×	×	✓	✓	×
Media card slot	✓	✓	×	✓	✓
Audio	Headphone jack, Toslink out	Headphone jack, mic	Headphone jack, mic	headphone jack, mic	Headphone jack, mic
Optical drive	N/A	8x DVD±R, 2.4x DVD-RW, 4x DVD+RW, 8x DVD-ROM	8x DVD ± RW	6x BD-ROM/DVD±RW	6x BD-ROM, 8x DVD±R, 2.4x DVD-RW, 4x DVD+RW
Extras	HD webcam, multitouch trackpad, backlit keyboard	Customisable backlit keyboard	Webcam	Webcam	HD webcam, Dolby Home Theater v4
Operating system	Mac OS X 10.7.4 Lion	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit
Bundled software	iLife 11	None	None	None	Samsung Recovery
Fear (Max detail)	N/A	84fps	90Wh lithium-ion	76.9Wh lithium-ion	N/A
Battery	99Wh lithium-polymer	63Wh lithium-ion	2 hrs 30 mins	3 hrs	89Wh lithium-ion
Battery life	N/A	5 hrs 7 mins	N/A	N/A	3 hrs
WorldBench 6 score	N/A	168	4,924 (PCMark 7)	4,333 (PCMark 7)	123
Dimensions	359x247x18mm	337x258x38mm	410x304x44.5mm	376x256x43mm	410x285x50mm
Weight	2kg	2.9kg	4.26kg	3.3kg	3kg
Warranty	1-year return-to-base	1-year in-home support	1-year onsite	2-year collect-and-return	1-year international
Verdict	Gorgeous super-resolution Retina display Outstanding build quality Wonderfully light and slim Effortless to use	Great gaming system Stunning WorldBench score SSD is now only 32GB Glossy screen can be difficult to read	Massive 17.3in screen Stunning gaming performance Weighty Not cheap	Chassis has cheap feel, average keyboard/touchpad Strong games and Windows performance Low price for the power	Not the fastest laptop in general Windows use Good graphics controller Vast 17.3in screen Blu-ray drive
FULL REVIEW	TINYURL.COM/7YGC3KJ	TINYURL.COM/CLGSCMV	TINYURL.COM/7N7R6T3	TINYURL.COM/9WTG6MP	TINYURL.COM/C93VN8N



£1,001+ laptops

Invest £1,000 or more in a laptop, and you can be reasonably sure of getting a high-quality PC.

Sometimes that money will be spent on getting a thin-and-light laptop, with good performance to boot. Alternatively, you may prefer a rugged laptop that's able to withstand wear and tear on the road, or a performance-first

high-powered workstation. Whatever your need, accept no compromises in build quality.

The best laptops should offer very good screens. Beware of glossy shiny panels that allow distracting reflections in certain lighting conditions.

Ultraportables may have 256GB or more of solid-state storage, but won't have an optical drive or GPU.

Workstation laptops will have faster - often quad-core - CPUs and a mobile graphics processor.

Rugged laptops are engineered for strength, at the expense of light weight and sleek design. Look out for milspec standard ratings, such as MIL-STD-810G.

You'll find a wide range of ports, high-grade components and extras. READ MORE: TINYURL.COM/CC3KBMM





Family PCs

Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

A family PC needs to offer decent performance in every area, able to cater for the needs of each individual - but there are some areas where you can cut costs.

If you're not itching to play the latest games, opt for integrated rather than dedicated graphics. AMD processors are more adept in this regard, while Intel CPUs offer faster application performance.

Intel's Core i5-3570K will form the core of a powerful home PC, although the older Core i5-2500K may be offered at lower cost and supports easy overclocking. Consider 4GB of RAM and a 500GB hard drive as the minimum; both are easy to upgrade later.

Screen quality is crucial, with the best displays using IPS tech. A Blu-ray drive will help make the most of a 23.6in full-HD monitor.

For Skyping, watching films and listening to music, decent speakers and a webcam are essential. READ MORE: TINYURL.COM/BL4UREB

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	Othics	THE RESERVE TO THE RE			7
Media PCs	PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED	3	AND	5
Media i os	Chillblast Vacuum Mini 2	Apple Mac mini	Quiet PC FC8 Fanless Mini PC	CyberPower Ultra HTPC	Arbico eXcel A2540
Price	£999 inc VAT	£795 inc VAT	£1,198 inc VAT	£749 inc VAT	£699 inc VAT
Website	Chillblast.com	Apple.com/uk	Quietpc.com	Cyberpowersystem.com	Arbico.co.uk
Build rating	***	****	****	***	***
Features rating	***	***	***	****	***
Performance rating	***	****	****	****	***
Value rating	***	****	***	***	***
Overall rating	***	****	***	***	***
Processor	2.5GHz Intel Core i7-3770T	2.3GHz Intel Core i7-3615QM	2.5GHz Intel Core i7-3770T	3.8GHz AMD FM2 A10-5800k	3.6GHz AMD A6-5400K
RAM	16GB DDR3	4GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage capacity	240GB SSD	1TB HDD	120GB SSD + 1TB HDD	120GB SSD + 1TB HDD	2TB HDD + 120GB SSD
Motherboard	Asus P8H77-I	Apple Mac Mini board	Gigabyte GA-Z77M-WIFI	Gigabyte F2A85XM-D3H	Asus F2A85-M LE
CPU cooler	Streacom heatpipe system	Apple cooling fan	Streacom heatpipe system	Standard AMD cooler	Scythe Shuriken
Power supply	Streacom 150W	85W Apple	NanoPSU 150W	500W Cooler Master	Xigmatek 400W
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	AMD Radeon HD 7660D	AMD Radeon HD 7540D
TV tuner	BGT 3620 (dual tuner)	N/A	TBS 6280 (dual tuner)	Compro S800F (dual tuner)	Compro VideoMate T220
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	N/A
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	×	×
USB	4x USB 3.0, 6x USB 2.0	4x USB 3.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0	2x USB 3;0, 4x USB 2.0
Ports	HDMI, DVI, VGA, S/PDIF, line-in/out	HDMI, Thunderbolt, FireWire 800, Toslink, line-in/out	2x HDMI, DVI, S/PDIF, mic, line-in/out	HDMI, DVI, VGA, S/PDIF, mic, line-in/out	HDMI, DVI, VGA, eSATA, S/PDIF, mic, line-in/out
Case	Streacom FC8 EVO	Apple aluminium unibody	Streacom FC8 EVO	Silverstone SST-GD06B	Silverstone Grandia GD04
Keyboard and mouse	Xebec HTPC wireless touchpad and keyboard	Apple Magic Trackpad, Apple Bluetooth Keyboard	Gigabyte GK-KM7580 wireless keyboard and mouse	N/A	Logitech K400 wireless keyboard
Remote control	✓ (integrated to keyboard)	× (optional, £25)	✓	✓	✓
LCD screen	×	×	×	×	×
Optical drive	Sony BD-ROM drive	Optional (£65)	8x Sony DVD±RW drive	12x Pioneer Blu-ray writer	6x LG Blu-ray writer
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Operating system	Windows 7 Home Prem 64bit	Apple OS X 10.8 Mountain Lion	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit
PC Mark Overall	5,749	3,038	5,928	4,113	3,332
PC Mark Entertainment	4,254	3,088	4,410	3,512	2,395
Stalker Med/Ultra (fps)	34/9	34/9	35/9	66/21	39/12
AvP Med/Ultra (fps)	8/5	8/5	9/5	24/13	13/7
Consumption (idle)	25W	11W	27W	41W	44W
Consumption (load)	52W	50W	61W	140W	109W
Warranty	2-year collect-and-return	2-year parts and labour	2-year collect-and-return	3-year labour, 1-year parts	2-year labour, 1-year parts
Verdict	Mostly silent operation Very good performance Small case Not the cheapest	Silent and power-efficient Looks and works great Needs some software setup Not the fastest overall	Strong storage Fastest general performance Average gaming speeds No Blu-ray	Strong storage Good gaming performance Blu-ray writer Rather too loud	Vast storage Blu-ray writer Poor benchmark figures High noise levels
FULL REVIEW	TINYURL.COM/CSFADGV	TINYURL.COM/D2DAZBQ	TINYURL.COM/D2CFDAS	TINYURL.COM/BLOTLC7	TINYURL.COM/CJBMRDL



Media PCs

Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

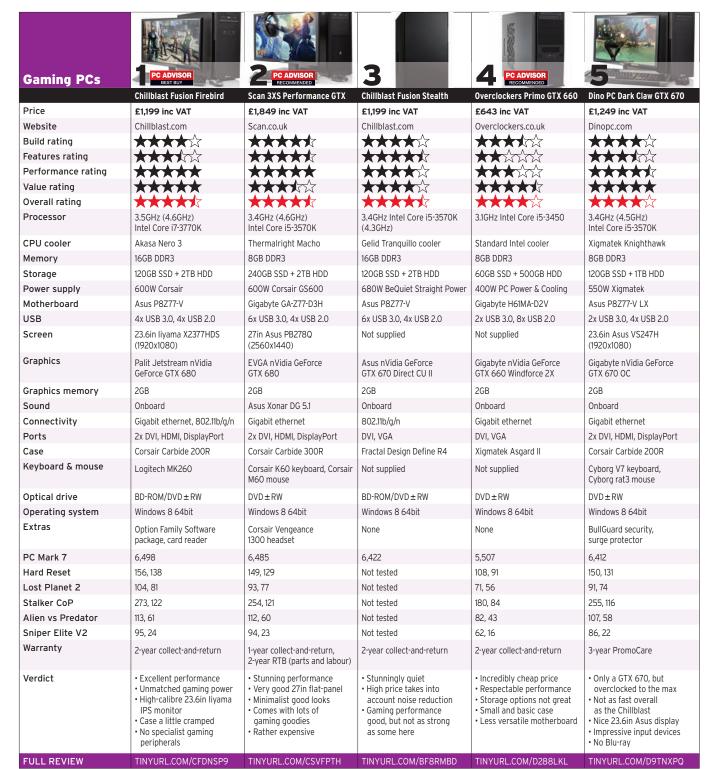
You can use any PC to create a media centre, but a quiet system is preferable. It's important to strike a balance between power consumption and performance - not only will the PC probably be left switched on for long periods, but a high-performance processor will generate large amounts of heat, and cooling that chip can involve noisy whirring fans.

Fanless systems can be built using large passive heat sinks or heat pipes, although you can find ultra-quiet tweakable fans if fitting one is unavoidable.

SSDs have no moving parts, making them silent in use. They're expensive, mind, so consider setting up a NAS elsewhere in your home for extra storage.

A TV tuner is desirable; you'll need a dual-tuner to watch and record shows simultaneously.

Also look for a Blu-ray drive and a wireless keyboard and mouse. READ MORE: TINYURL.COM/CGFOD2K



All gaming scores given at Medium and Ultra settings, measured in fps



Gaming PCs

Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

Gaming PCs put performance and upgradability before subtlety and quiet operation. Many run overclocked CPUs to eke out every bit of available speed. Intel's Core i5-3570K is a popular choice of CPU, but will require a decent cooler and beefy PSU. The HyperThreaded i7-3770K is slightly faster, but dearer.

Cooling is essential for stability. Liquid-cooling systems, dust filters, fan-speed controls and good cable-management can aid airflow.

Most important of all is the graphics card; vendors will often

skimp on storage, networking and other features and throw all their budget at the graphics card.

nVidia's GTX 680 delivers unparalleled performance – but at a price. Cheaper solutions include the GeForce GTX 660 and 670.

Look for wired peripherals and a headset. Good warranty terms are crucial for overclocked PCs. READ MORE: TINYURL.COM/CZXH443

All-in-one PCs		PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	5
	Apple iMac 21.5in 2.7GHz	Lenovo IdeaCentre A720	HP Z1 (WM429EA)	Asus ET2411NTI	PC Spec PowerGlide Extreme
Price	£1,099 inc VAT	£1,299 inc VAT	£2,500 inc VAT	£999 inc VAT	£899 inc VAT
Website	Apple.com/uk	Lenovo.com/uk	Hp.com/uk	Uk.asus.com	Pcspecialist.co.uk
Build rating	****	****	****	****	***
Features rating	***	****	****	***	****
Performance rating	***	***	****	****	****
Value rating	***	***	****	***	***
Overall rating	***	****	***	***	***
Processor	2.7GHz Intel Core i5-3335S	2.3-3.3GHz Intel Core i7-3610QM	3.5-3.9GHz Intel Xeon E3-1280	3.1-3.5GHz Intel Core i5-3450	3.4-3.8GHz Intel Core i5-3570K
RAM	8GB DDR3	8GB DDR3	8GB DDR3	6GB DDR3	8GB DDR3
Storage capacity	1TB hard drive	750GB hard drive	1TB hard drive	1TB hard drive	2TB hard drive
Screen	21.5in IPS glossy	27in MVA 10-point touchscreen	27in IPS	23.6in TN 2-point touchscreen	24in TN 2-point touchscreen
Screen resolution	1920x1080	1920x1080	2560x1400	1920x1080	1920x1080
Graphics card	nVidia GeForce GT 640M	nVidia GeForce GT 630M	nVidia Quadro 1000M	nVidia GeForce GT 630M	nVidia GeForce GT 640
Video memory	512MB	2GB	2GB	1GB	1GB
Wireless	802.11a/b/g/n	802.11b/g/n	802.11a/b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	√	√	√	√	✓
Bluetooth	✓	×	×	×	×
USB	4x USB 3.0	2x USB 3.0, 2x USB 2.0	2x USB 3.0, 4x USB 2.0	2x USB 3.0, 3x USB 2.0	2x USB 3.0, 5x USB 2.0
FireWire	x	✓	✓	x	x
Thunderbolt	<i></i>	×	x	×	×
HDMI	×	<i></i>	×	<i>"</i>	<i>√</i>
Media card slot	<i>-</i>	, ✓	<i>√</i>	<i>√</i>	√
Max disc speeds	None	BD-ROM/DVD±RW	DVD±R	BD-ROM/DVD±RW	BD-ROM/DVD-+RW
max disc speeds	Notice	DD-ROW/DVD±RW	DVD±K	DD-KOM/DVD±KW	BU-ROM/UVU-+RW
Extras	720p webcam, wireless keyboard and Mouse	720p webcam, tuner, remote, wireless keyboard and mouse	2Mp webcam, wired keyboard and mouse	1.3Mp webcam, woofer, wireless keyboard and mouse	2Mp webcam, SATA dock
Operating system	Mac OS X 10.8 Mountain Lion	Windows 7 Home Premium 64bit	Windows 7 Professional 64bit	Windows 7 Home Premium 64bit	Windows 7 Home Premium 64bit
Power consumption	Not tested	45W (idle), 111W (under load)	82W (idle), 210W (under load)	34W (idle), 93W (under load)	54W (idle), 132W (under load)
Crysis (720p)	Not tested	111fps	109fps	104fps	111fps
Crysis (1080p)	Not tested	8fps	7fps	7fps	8fps
WorldBench 6 score	2,487 PCMark 7	140	172	163	169
Dimensions	450x528x175mm	650x220x480mm	660x419x59mm	590x461x230mm	571x128x464mm
Weight	5.7kg	11.6kg	21kg	10.8kg	10.5kg
Warranty	1 year return-to-base	1-year return-to-base	3-year onsite	1-year return-to-base	1-year collect-and-return
Verdict	Superb slim design 2013 models are more expensive than before Excellent screen benefits from anti-glare coating SSD version will be much faster	Sleek and stylish O-point touchscreen Strong software and multimedia features Relatively low WorldBench performance score	Excellent display Not a touch interface Superb all-round performance No Blu-ray support Many ports and connectors are hard to access	Strong build quality Screen has decent colour, but poor contrast and viewing angles. Only two touch points Speaker system well above average Doesn't offer the best value	Good gaming performance Uninspiring plastic looks Quad-core Intel 15-3570K packs lots of power Fans are too noisy No preinstalled software
FULL REVIEW	TINYURL.COM/BK83EB8	TINYURL.COM/93EUU4F	TINYURL.COM/CJ8MCMA	TINYURL.COM/CHJDOMU	TINYURL.COM/9K8WGSO



All-in-one PCs

Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

All-in-one PCs build into a large (21- to 27in) monitor all the components they require to run, making them an excellent and stylish solution for saving space.

However, with limited internal space for cooling, all-in-one machines tend to include less powerful components than traditional desktops. Expect to find integrated or laptop graphics processors and mobile CPUs inside.

All-in-ones aren't usually easy to upgrade, but many are pre-packed with Wi-Fi, Bluetooth, speakers and even Blu-ray players. Touchscreen displays are likely to become more desirable once Windows 8 is released. If you buy one now, ensure the image quality hasn't been compromised and that it's sufficiently responsive to touch.

The quality of the supplied keyboard and mouse (usually wireless) is critical. TV tuners and HDMI ports are welcome additions. READ MORE: TINYURL.COM/87VW5KJ

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- Asus P8Z77-V Motherboard
- 16GB PC3-12800 DDR3 Memory
- •GeForce GTX 680 2GB Graphics Card
- 120GB Samsung 840 Series SSD & 2TB HDD Blu Ray ROM / DVD-RW Drive Corsair 600W PSU

- Onboard High Definition Audio
- Windows 8 64bit (or Windows 7 64 bit)
- •23" liyama IPS Monitor
- All systems comes with 2 year warranty!

FUSION SAPPHIRE

- CIT Fortress Micro ATX Case with USB3 •Intel lyybridge Core i5 3570K CPU
- Asus P8B75-M LX USB3 Motherboard
- •8GB PC3-10666 DDR3 Memory
- •Intel HD4000 Graphics Card
- 1000GB SATA III 7200rpm Hard Disk
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Smartphones

The smartphone you choose to use is a very personal choice - while some prefer a small device that slips into a pocket, others prefer a large-screen handset that's better suited to watching video and typing on an onscreen keyboard.

The screen's resolution is just as important as its size. More pixels mean text and photos look

sharper, and more information can be shown onscreen at once.

Unlike Android, iOS doesn't support Flash. However, HTML 5 is slowly replacing the standard, and Adobe has discontinued development of Flash Player for mobile devices in any case. Mobile apps can also allow you to view sites that still use Flash.

Look for a fast processor and decent graphics if you want to play games or watch video.

It's common to see mobile operators offer expensive handsets free with 24-month contracts. It'll usually work out cheaper to buy the handset outright, however, and it won't be locked to a network.

READ MORE: TINYURL.COM/75K2AS3

Sub-£150 printers	PC ADVISOR	2 PC ADVISOR BEST BUY	3	PC ADVISOR RECOMMENDED	5 PC ADVISOR RECOMMENDED
	Samsung ML-2955DW	Oki C110	Pantum P2050	Canon MX895	HP Photosmart 7520
Price	£100 inc VAT	£126 inc VAT	£60 inc VAT	£140 inc VAT	£145 inc VAT
Website	Samsung.com/uk	Oki.co.uk	Pantum.com	Canon.co.uk	Hp.com/uk
Overall rating	***	***	***	****	***
Technology	Mono laser	Colour laser	Mono laser	Colour inkjet	Colour inkjet
Max print resolution	1200x1200dpi	1200x600dpi	1200x600dpi	9600x2400dpi	9600x2400dpi
Actual print speed	B=22.2ppm	B=15.8ppm/C=2.5ppm	B=15.8ppm	B=11.9ppm C=7.3ppm	B=17.6ppm C=7.9ppm
Scan/fax facilities	None	None	None	1200x2400 scans, fax	1200x2400 scans
Supported interfaces	USB 2.0, 802.11b/g/n, ethernet	USB 2.0	USB 2.0	USB 2.0, 802.11b/g/n, ethernet	USB 2.0, 802.11b/g/n, HP ePrint
Cost per page	B=2.7p	B=3.6p/C=5p	B=2.4p	B=2.9p/C=12.5p	B=2.4p/C=4.8p
Media card/auto duplex	×√	××	××	√√	√ √
Input capacity	251 sheets	100 sheets	150 sheets + manual	150 sheets + 35 ADF	125 sheets + 20 tray + 25 ADF
Dimensions	348x338x197mm	396x380x275mm	380x260x236mm	491x448x218mm	454x551x220mm
Weight	7.2kg	14.4kg	6.1kg	11.7kg	8.6kg
Warranty	1 year	3 years	1 year	1 year	1 year
Verdict	Speedy for the price Slim but well-defined text Reasonable running costs Wi-Fi/wired network support	Good value even at £140 Performs better than an equivalent inkjet No duplex mode	Low price for a laser Decent design No fancy features Solid running costs	Excellent photo quality Both Wi-Fi and Ethernet Scans and faxes Not the fastest printer	Nice 4.3in touchscreen Separate photo/ADF trays Good speed for an Inkjet Competitive running costs
FULL REVIEW	TINYURL.COM/CCLSZDM	TINYURL.COM/YLNO5RV	TINYURL.COM/C764SZ2	TINYURL.COM/92YQ4SF	TINYURL.COM/98G9XTE



GLOSSARY: • B: mono • C: colour • ppm: pages per minute



Printers

Most printers are inkjet or laser models, and there are colour and mono flavours of each. Lasers tend to be more expensive to buy, but provide better-quality output, particularly where text is involved.

The price you pay instore is only the beginning; also consider the cost of replenishing the ink and paper. Duplexing lets you print to both sides of a sheet, saving paper but slowing output.

Multifunction printers can save you money if you also require scanning facilities; some models include copy and fax functions, too.

A USB port lets you connect a printer to a single PC, but built-in wireless networking allows it to join a home or office network. A memory card slot will let you bypass a PC for printing.

Never trust a manufacturer's claimed print speeds; we run our own tests to properly assess each printer's performance.

High-capacity paper trays and auto document feeders are also worth looking for. READ MORE: TINYURL.COM/BUX9QMO



Wireless routers	PC ADVISOR RECOMMENDED	2	PC ADVISOR BEST BLY	PC ADVISOR RECOMMENDED	5 PC ADVISOR BEST BUY
	Apple AirPort Express	D-Link Cloud Router N600	Cisco Linksys EA6500	Asus RT-AC66U	AVM FritzBox Fon 7390
Price	£79 inc VAT	£60 inc VAT	£200 inc VAT	£175 inc VAT	£200 inc VAT
Website	Apple.com/uk	Dlink.com	Linksysbycisco.com	Uk.asus.com	Fritzbox.eu
Overall rating	***	***	***	***	***
Standards supported	802.11a/b/g/n	802.11a/b/g/n	802.11b/g/n/ac	802.11b/g/n/ac	802.11a/b/g/n
Frequency modes	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz	2.4GHz/5GHz	2.4GHz/5GHz (concurrent)
128/256bit WEP/WPA2	√×√	√×√	√x√	√x√	√×√
ADSL Modem/Guest NW	x √	×√	x√	x √	x √
Parental cont./mobile app	√ √	√ √	✓✓	√ √	√ √
Firewall	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI
Ports	10/100 WAN, 10/100 LAN, USB	Gig WAN, 4x gig LAN, USB	Gig WAN, 4x gig LAN, 2x USB	Gig WAN, 4x gig LAN, 2x USB	10/100 WAN, 4x gig LAN, 2x USB
Average power use	Not tested	Not tested	10.2W	9W	Not tested
Throughput (near, far, ac)	94Mbps, n/a, n/a	142Mbps, 115Mbps, n/a	266Mbps, 195Mbps, 471Mbps	270Mbps, 199Mbps, 457Mbps	92Mbps, 38Mbps, n/a
Dimensions, weight	98x98x23mm, 240g	111x93x145mm, 330g	256x184x40mm, 500g	207x149x36mm, 450kg	226x160x48mm, not specified
Warranty	1 year	1 year	2 years	2 years	5 years
Verdict	Sleek, flat and square look Concurrent 2.4/5GHz Extremely easy setup Digital audio output	Cloud features Parental controls Excellent value Interesting looks	• Stunning performance • Excellent interface • Strong QoS • 802.11ac isn't cheap	Decent value Versatile antennae Great for file-hosting and media streaming	Supports landline and internet telephony Dual-band Wi-Fi USB port
FULL REVIEW	TINYURL.COM/6LH600S	TINYURL.COM/9LGFF8Y	TINYURL.COM/AWYOPYX	TINYURL.COM/BU79W64	TINYURL.COM/3QUJZBX



Blu-ray drives

A single Blu-ray Disc holds the equivalent of 35 CDs or five DVDs. It might look like a DVD, but its shorter wavelength and narrow blue laser beam allow it to hold greater capacity. It's the storage method of choice for HD and 3D video content.

External drives are easier to install, portable, and can be shared

between PCs, but they will cost you considerably more than internal models, and may not be as quick.

If you opt for an internal drive, ensure you have enough space inside your PC. Most internal drives use the SATA interface, so check you've got a compatible port.

Look for a drive that also supports several DVD formats, but don't obsess about write speeds. You should be able to get 16-speed DVD writing, but it's not worth paying more to save seconds.

You may find that the Blu-ray media currently on the market isn't fast enough to enjoy your chosen drive's maximum write speeds.

Six-/eight-speed BD-R capabilities are standard, but even six-speed BD-R media is still rare.

READ MORE: TINYURL.COM/70EPYL6

External hard drives	PC ADVISOR BEST BLY	PC ADVISOR RECOMMENDED	G PC ADVISOR	1 2 3 4 4 5 6 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	5
	Seagate FreeAgent GoFlex	WD My Passport Edge for Mac	G-Tech G-Raid Thunderbolt	iStorage diskAshur 256bit	WD My Book Thunderbolt Duo
Price	£170 inc VAT	£75 inc VAT	£750 inc VAT	£165 inc VAT	£395 inc VAT
Website	Seagate.com	Wdc.com/en	G-technology.com	Istorage-uk.com	Wdc.com
Overall rating	***	***	***	***	***
Capacity tested	3TB	500GB	8TB	500GB	4TB
Capacity range	1TB to 3TB	500GB	4TB to 8TB	250GB to 1.5TB	4TB to 6TB
Disk size	3.5in	2.5in	3.5in	2.5in	3.5in
Spin speed	7,200rpm	5,400rpm	7,200rpm	5,400rpm	7,200rpm
Transfer speed	94MBps (USB 3.0)	94Mbps (USB 3.0)	329MBps	94Mbps (USB 3.0)	223MBps
Encryption	192bit	Password protection	None	256bit	None
Other interfaces	Optional FireWire 800	None	None	None	None
Software	Memo Backup	WD utilities	None	None	WD Drive Utilities
Dimensions	158x124x44mm	112x83x11mm	235x130x85mm	19x85x120mm	165x157x99mm
Weight	1kg	164g	2.3kg	176g	2.2kg
Warranty	2 years	3 years	3 years	1 year	3 years
Verdict	Great speed for USB 3.0 Great value for capacity Separate storage drive and USB 3.0 dock	Not just for Macs Password protection Faultless build quality Great value	Fast Thunderbolt interface Real-world speed can exceed 200MBps Pricey, but huge capacity	256bit encryption PINs, self-destruct passwords, anti-hacker tools 2.5in disk stifles speed	Thunderbolt interface Not as fast as some Thunderbolt Raid drives Quiet and cool operation
FULL REVIEW	TINYURL.COM/BN2Z92F	TINYURL.COM/BMG7SW9	TINYURL.COM/CXEF6MH	TINYURL.COM/CX3DNHY	TINYURL.COM/C6TADAH





NAS drives

NAS drives are ideal for businesses or home users who require large amounts of dependable and secure storage, accessible to anyone logged into the local wired or wireless network.

Instead of connecting a hard disk directly to one PC, the NAS is connected to a network via a router. Many NAS drives are typically supplied without disks, letting you add your own selection.

Most NAS drives allow virtual partitions, letting you keep data such as PC backups separate from media files. Home-oriented NAS drives also include media servers to allow easy streaming of content.

To augment data integrity, access speed, capacity, or all

three, individual hard disks can be combined in a number of Raid configurations. Raid O 'stripes' data across multiple drives to increase access speeds. Raid 1 mirrors the contents of one drive on to another, providing a cloned backup. Raid 5 is available with three-plus drives and combines both advantages.

READ MORE: TINYURL.COM/7H3HCNR



¹Ansi lumens GLOSSARY: • CM: component • CP: composite • ET: ethernet • SV: S-Video

Compact system cameras	PC ADVISOR RECOMMENDED	PC ADVISOR BEST BUY	Canan	PC ADVISOR GOLD	5 E
	Panasonic DMC-G3 (14-42mm)	Nikon D5100 (18-55mm)	Canon EOS 600D (18-55mm)	Sony Alpha NEX-5 (18-55mm)	Pentax K-01 (18-55mm)
Price	£350 inc VAT	£500 inc VAT	£500 inc VAT	£490 inc VAT	£425 inc VAT
Website	Panasonic.co.uk	Nikon.co.uk	Canon.co.uk	Sony.co.uk	Pentax.co.uk
Overall rating	***	***	★★★☆	***	***
Megapixel rating	16Mp	16.2Mp	18Mp	14.6Mp	16.28Mp
Maximum resolution	4592x3448 pixels	4923x3264 pixels	5184x3456 pixels	4592x3056 pixels	4928x3264 pixels
Optical zoom	3x	3x	3x	3.1x	N/A
Maximum aperture	f3.5-f5.6	f3.5-f5.6	f3.5-f5.6	f3.5-f5.6	N/A
LCD size	3in	3in	3in	3in	3in
Media card	SD/SDHC/SDXC	SD/SDHC/SDXC	SD/SDHC/SDXC	MS/SD/SDHC	SD/SDHC/SDXC
Battery/life	1x lithium-ion/270 shots	1x lithium-ion/660 shots	1x lithium-ion/440 shots	1x lithium-ion/not specified	1x lithium-ion/540 shots
ISO range	100 to 6,400	100 to 6,400	100 to 6,400	200 to 12,800	100 to 12,800
Dimensions	115x84x47mm	124x97x79mm	133x100x80mm	111x59x38mm	121x59x79mm
Weight	336g	510g	570g	229g	480g
Warranty	3 years	3 years	1 year	1 year	1 year
Verdict	Great dSLR alternative Rotating touchscreen Strong video-capture mode Very fast autofocus	Excellent stills and video Suitable for novice and intermediate photographers Plenty of lenses available	Now at an excellent price Top-notch photo results Fully auto/manual modes Strong video capture	Compact Great performance Great colour fidelity Takes clean, sharp shots	K-mount lens Impressive image quality No optical viewfinder Slower than digital SLRs
FULL REVIEW	TINYURL.COM/7JCXJCR	TINYURL.COM/6UTE9KK	TINYURL.COM/72STE88	TINYURL.COM/37XOZX5	TINYURL.COM/BOAJTO8



Projectors

Projectors designed for home use don't tend to be as bright as office models – anything offering fewer than 1,000 Ansi lumens will be usable only in a dark room. And don't forget that the brightness drops as the image size increases.

The cheapest home-cinema models offer a 720p resolution, but you'll notice the extra detail of 1080p when watching Blu-ray films on a large screen.

If you can't place the projector square-on to the screen, look for a model with lens shift. Keystone correction is a cheaper alternative, altering the image digitally, but degrading quality in the process.

A zoom function offers more flexibility over how far from the

screen you can site the projector. If it's to go in a small room, get a short-throw model that produces a large image over a short distance.

DLP projectors offer better contrast and punchier colours than LCD models, but can suffer from the distracting and sometimes nauseating 'rainbow effect'.

READ MORE: TINYURL.COM/6MTMWJX

Sub-£150 graphics cards		2	3	4	5
	Sapphire HD 7770	Sapphire Radeon HD 7750	Asus Radeon HD 6670	MSI GeForce GTX 650 Ti OC	Gigabyte GeForce GT 640 OC
Price	£105 inc VAT	£80 inc VAT	£60 inc VAT	£120 inc VAT	£90 inc VAT
Website	Sapphiretech.com	Sapphiretech.com	Uk.asus.com	Uk.msi.com	Uk.gigabyte.com
Overall rating	***	***	***	***	***
Graphics processor	AMD Radeon HD 7770	AMD Radeon HD 7750	AMD Radeon HD 6670	nVidia GeForce GTX 650 Ti	nVidia GeForce GT 640
Installed RAM	1GB GDDR5	1GB GDDR5	1GB DDR3	1GB GDDR5	2GB DDR3
Memory interface	128bit	128bit	128bit	128bit	128bit
Core/memory clock	1GHz/1,125MHz	800MHz/1,125MHz	800MHz/900MHz	954MHz/1,350MHz	1,050MHz/1,800MHz
Ramdac	400MHz	400MHz	400MHz	400MHz	400MHz
Stream processors	640	512	480	768	384
Power connectors	1x 6-pin	None	None	1x 6-pin	None
Interface	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express
DirectX	11.1	11.0	11.0	11.0	11.0
Digital interface	DVI, HDMI, Mini-DisplayPort	DVI, HDMI, DisplayPort	DVI, HDMI	2x DVI, 1x Mini-HDMI	2x DVI, HDMI
Warranty	3 years	2 years	3 years	2 years	3 years
Verdict	• Faster than 7750 • Good value at just £25 more • Only 128bit memory • Low sound levels	Offers better overall value than the GT 640 OC Some way behind the 7770 Light on power	Great-value video card 800MHz core clock memory 128bit memory limits appeal Lacks power for some games	Plenty of performance Good set of specifications Hampered by 128bit memory interface	Costs more than 7750 Falls far behind 7770 The best version of this card Three digital connectors
FULL REVIEW	TINYURL.COM/BWJ7BL9	TINYURL.COM/7ZB50E3	TINYURL.COM/3LM8HGE	TINYURL.COM/8Z5BDCZ	TINYURL.COM/90SWMK2





Graphics cards

The key feature of a graphics card is its GPU. Produced by AMD or nVidia, this determines the quality of images displayed and their refresh speed. The more powerful the GPU the better, but you can get away with a lesser card by turning down a game's detail levels.

Even those on a budget should be able to get at least 1GB of DDR

video memory. Look for GDDR5 rather than GDDR3 RAM. This in effect quadruples the clock speed (GDDR3 merely doubles it).

The memory interface (or bus) governs how much data can be sent at once, so a 256bit interface lets through twice as much data as a 128bit interface. Graphics cards with the best combination of memory interface size and

clock speed should produce the best performance.

DirectX 11.x support is required for advanced, modern games; cheaper cards lack the firepower to do such titles justice, however.

Check that a card will fit inside your PC and you have sufficient connections from the power supply unit before you buy. READ MORE: TINYURL.COM/7BPUHQE



£200+ flat-panels	PC ADVISOR RECOMMENDED	2	3		5
Price	Dell S2440L £205 inc VAT	Asus PA248Q £340 inc VAT	AOC myPlay I2757Fm £230 inc VAT	ViewSonic VP2765-LED	Philips 248X3LFHSB
Website	Dell.co.uk				
Overall rating	Deli.co.uk	Asus.com/uk	Aoc.co.uk	Viewsoniceurope.com/uk	Philips.co.uk
Screen size	24in	24in	27in	27in	23.6in
Panel type	Vertical Alignment	In-plane switching	In-plane switching	Advanced MVA	Twisted nematic
Native resolution	1920x1080 pixels	1920x1200 pixels	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels
Pixel pitch	0.28mm	0.27mm	0.31mm	0.31mm	0.27mm
Brightness	239cd/m ²	201cd/m ²	237cd/m ²	1,200cd/m ²	326cd/m ²
Static contrast ratio	1,200:1	630:1	660:1	378:1	800:1
Response time	6ms	6ms	5ms	25ms	2ms
Ports	HDMI, VGA	4x USB, HDMI, DVI, DP, VGA	2x HDMI, VGA	DVI, DisplayPort	2x HDMI
Dimensions	568x191x418mm	557x416x235mm	622x449x130mm	642x365x474-608mm	578x443x194mm
Weight	3.6kg	6.4kg	5.7kg	8.5kg	5.1kg
Warranty	3 years	3 years	3 years	3 years	3 years
Verdict	Premium build quality Very good VA panel Excellent contrast ratio Calibrate for best results	For graphics professionals Good control over image Very accurate colour 16:10 contrast ratio	Nice 27in IPS panel Versatile viewing angles MHL Android hook-up Base can be removed	Large 27in display Low resolution for size Poor viewing angles Slow response for games	Graceful design Illuminated Lightframe bezel reduces eye fatigue Twisted nematic panel
FULL REVIEW	TINYURL.COM/CXWJJLM	TINYURL.COM/CPYX7MQ	TINYURL.COM/C53K8KP	TINYURL.COM/86T3PFM	TINYURL.COM/6MJA2NS



Flat-panel displays

You'll spend most of your working day staring at the screen, so it makes sense to choose one that's comfortable to view.

The panel size will largely depend on your budget and amount of desk space, but those measuring 22in and above tend to offer a full-HD resolution. All bar the cheapest models also have at

least one digital interface (DVI, HDMI or DisplayPort). VGA (or D-Sub) is an analogue interface, and won't provide as clean a signal.

The panel technology is important. Twisted nematic (TN) is the budget option, offering fast response times but limited viewing angles. Multiple vertical alignment (MVA) and patterned vertical alignment (PVA) screens offer

better viewing angles and higher contrast ratios than TN, but slower response times. Advanced MVA screens are more responsive.

In-plane switching (IPS) panels offer excellent viewing angles, contrast and colour accuracy, but they can be rather pricey.

Get a matt rather than gloss coating for fewer reflections. READ MORE: TINYURL.COM/6RMBVR6

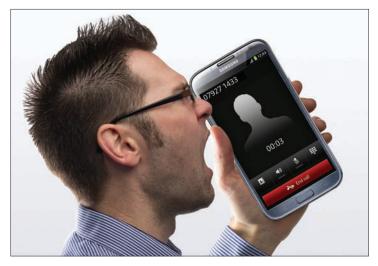




Will you buy a phablet?

t's no secret that phones are getting bigger. The original iPhone had a 3.5in screen, and that seemed big back in 2007. Fast-forward to 2013 and the 4in iPhone 5 has one of the smallest screens of the current crop of smartphones. Rumours are rife that Apple will launch two iPhones this year - a 4.8in monster, and an iPhone mini, perhaps returning to the 3.5in screen of yesteryear.

However, even a 4.8in iPhone will look small next to the array of 'phablets' that will go on sale this year. A combination of phone and tablet, a so-called phablet is an in-betweener device with a screen somewhere between 5- and 6.5 inches.



The Samsung Galaxy Note with its whopping 5.3in screen was the first phablet to hit it off with consumers. It's taken a couple of years, but other smartphone makers are now following suit. Samsung has already launched the 5.5in Note II, while Sony, Huawei and ZTE are expected to release 5in phablets with full-HD resolutions in 2013.

Phablets are more popular than you might think: according to IHS, 25.6 million phablets were sold in 2012. It predicts sales of more than 60 million phablets in 2013.

We ran our own poll (see page 8), to which more than 1,500 of you responded. The results tally with this prediction: 35 percent said they'd buy a phablet this year, and 7 percent already own one. Roughly half said they wouldn't be buying one, and the rest were undecided.

You've got to feel sorry for Dell in all this. The Galaxy Note wasn't the first phablet; in June 2010, Dell launched the Streak 5, which had a 5in screen. Presumably, it failed because people weren't ready for a phone this big. The even larger Streak 7 was onsale for only a few months in 2011.

Phablets look set to become big business in 2013, so expect to see people holding giant phones to their ears in the very near future. oximes

Next issue

ISSUE 215 ON SALE 4 APRIL 2013

All-in-one PCs round-up

The all-in-one hopes to restore the PC to its CENTRE rightful home on the desktop. We round up

six of the latest machines to see how they fare.

TEST Keyboards on test

Many PCs ship with basic keyboards, but if CENTRE you do a lot of typing you'll benefit from an

upgrade. We test eight high-quality keyboards.

Speaker bars

Forget the mess of surround-sound speaker CENTRE systems: we put six of the best speaker

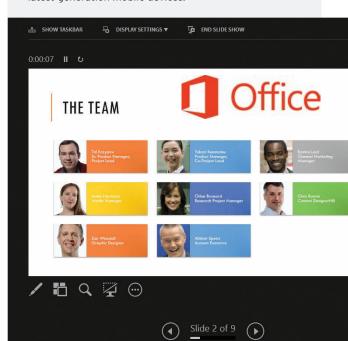
bars to the test. These compact systems provide better sound than your TV, but take up hardly any room.

3D Printing

With 3D printer prices dropping, you can print your own 3D designs at home. Find out what you can print, as well as what the future holds for 3D printing.

Office 2013

We put the latest version of Microsoft Office through its paces. Designed for touchscreens as well as traditional PCs, Office 2013 is accessible on the latest-generation mobile devices.







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