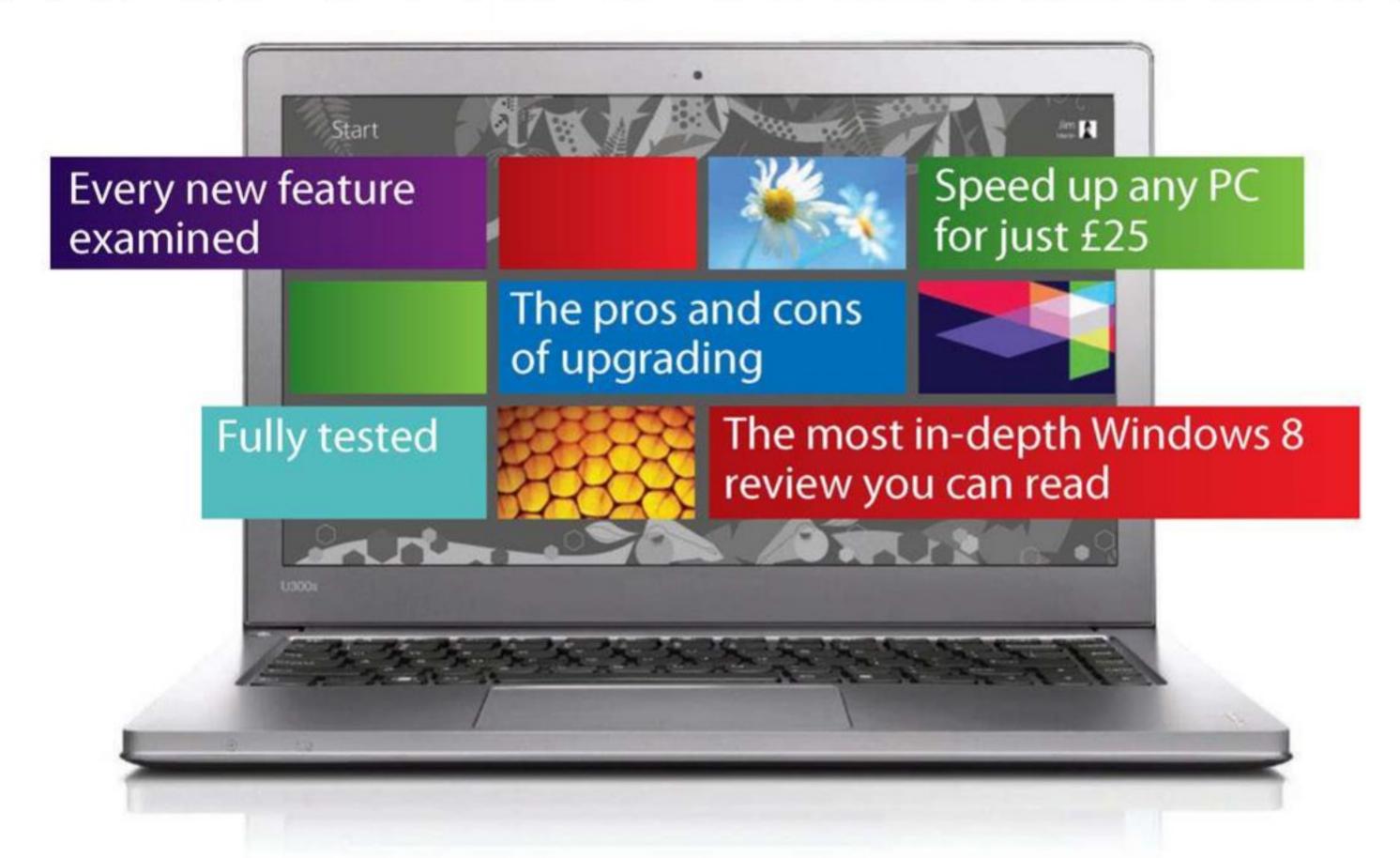
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WINDOWS 8 THE REVIEW



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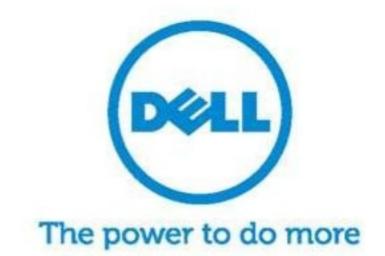


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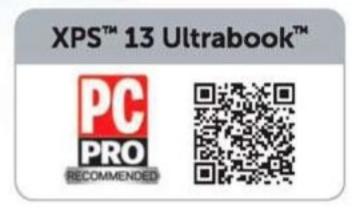


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14 Using Windows 8

Dabbling in an operating system and relying on it for work purposes are two very different things. We took the plunge with Windows on our work desktop PC a few weeks back; here are 10 things we've learned.

18 Nokia's future hangs on Windows Phone 8

We investigate whether Windows Phone 8 has what it takes to help Nokia increase its flagging sales amidst the deafening noise created by the recent iPhone 5 launch.

20 ARM chip makers fight for Windows 8 tablets

nVidia is no longer the only cat in town when it comes to building the ARM processors that power Windows RT tablets. Key hardware players Samsung and Dell have recently announced Windows RT tablets running Qualcomm chips - but



how do they stack up?





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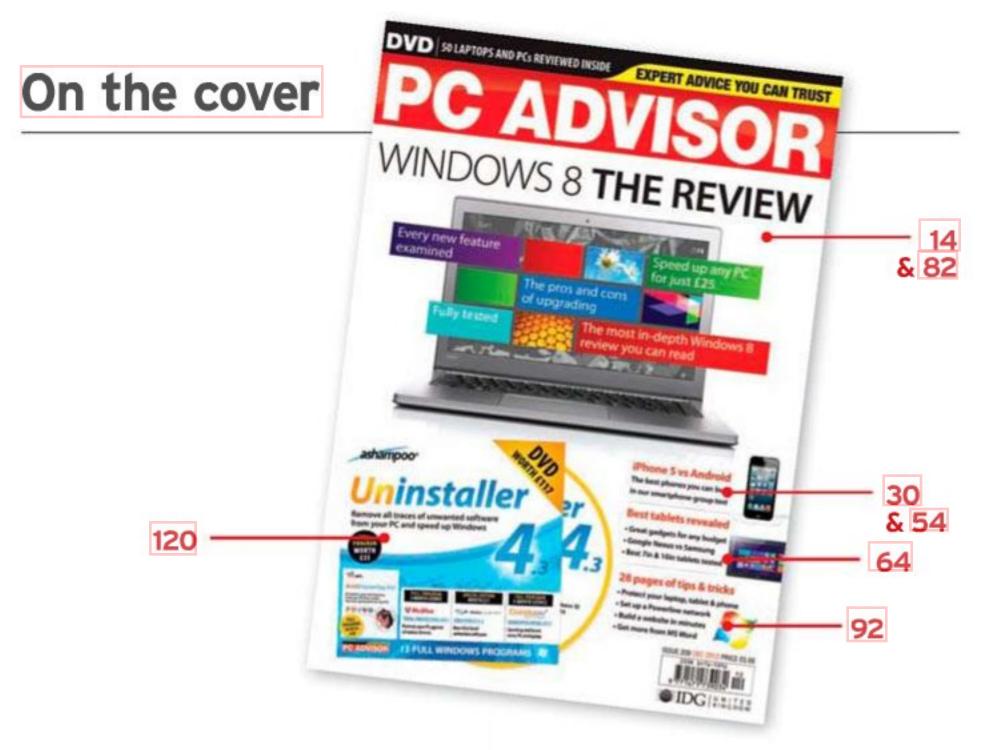
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54 Smartphones group test

With Apple releasing just one phone per year, BlackBerry struggling to maintain user interest, and Windows Phone 8 yet to be released, phone makers have only one option: Android. We look at six mid-range handsets that could be top of your wishlist if you haven't got your heart set on Apple's latest smartphone.

64 Tablet round-up

We look at a range of 7- and 10in tablets, from the renowned Google Nexus 7 to perhaps less well known Kurio and GoClever models, to help you find the best buy on any budget.

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82 Windows 8 in-depth

Windows 8 is here, and it represents the biggest change since Windows 95. We take an in-depth look at the OS, examining each and every new feature and explaining the pros and cons of upgrading.

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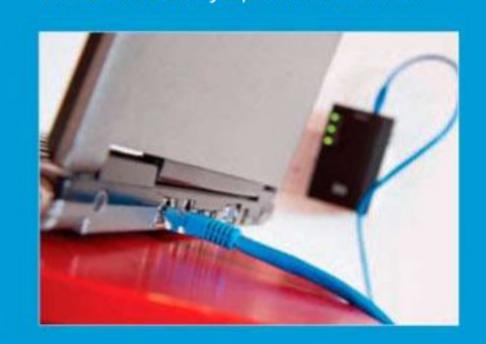


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Revolution, evolution and Windows 8

Microsoft isn't garnering as much public attention for its forthcoming Windows 8 launch as did Apple with its iPhone 5, but we think it's a worthwhile upgrade

eaving aside this intriguing naming convention for the sixth-gen Apple smartphone, the most interesting aspect of the iPhone 5 launch is the level of interest in a product that is merely an iterative development of its predecessor. The original iPhone changed smartphones forever; the iPhone 5 merely finesses the iPhone 4S.

Gone are the days when Apple's mobile devices were so far ahead of everyone else's as to make comparison pointless. With high-end Android phones from the likes of Samsung and Sony, and the forthcoming Nokia and HTC Windows phones, the iPhone is now just one of a bunch of amazing handhelds (we review the best of them on page 54).

But a quick glance at the online readership figures tells us Apple hasn't lost its knack of generating web-melting levels of interest. There's a lot of passion for the iPhone 5, and many reader comments were posted on our coverage. A lot bemoaned the fact that the iPhone 5 isn't as radical or ground-breaking as its predecessors. By making a succession of brilliant, game-changing products - OS X, iPod, iPhone, iPad - Apple has set the bar impossibly high. Anything less than revolutionary now looks like failure.

Given that it shifted more than 5 million iPhone 5s in the first weekend it was on sale, Apple could probably care less. And it's a problem Microsoft would love to have as it prepares to launch its own game-changer.

Windows 8 has garnered less public interest in the run up to its October launch than did the iPhone 5. But it is seen as a total break with the past as much of a year zero for PCs as was the original iPhone for mobiles.

Both of these perceptions are wrong, as our in-depth Windows 8 review (page 82) shows. I've been using the final Windows 8 code for several weeks now. I've written about this on page 14, but suffice to say it is an impressive OS. At £25 it's a worthwhile and far-from-scary upgrade.

Partly in response to the success of Apple's products Microsoft has designed Windows 8 to work well on an array of devices, from PCs to Ultrabooks and tablets. But don't think that Windows 8 represents a steep learning curve for PC or laptop users. In fact, it is simply a stable and fast desktop and laptop OS. Yes, the Start menu has disappeared, but it has been replaced by a Start screen from which you can access apps and live data (although you don't have to). And while touchscreen input makes Windows 8 fun, it works just as well with a keyboard and mouse.

Windows 8 makes any PC faster, and adds features such as the Windows Store. It won't be for everyone, but for £25 it's a nice upgrade. ⊠

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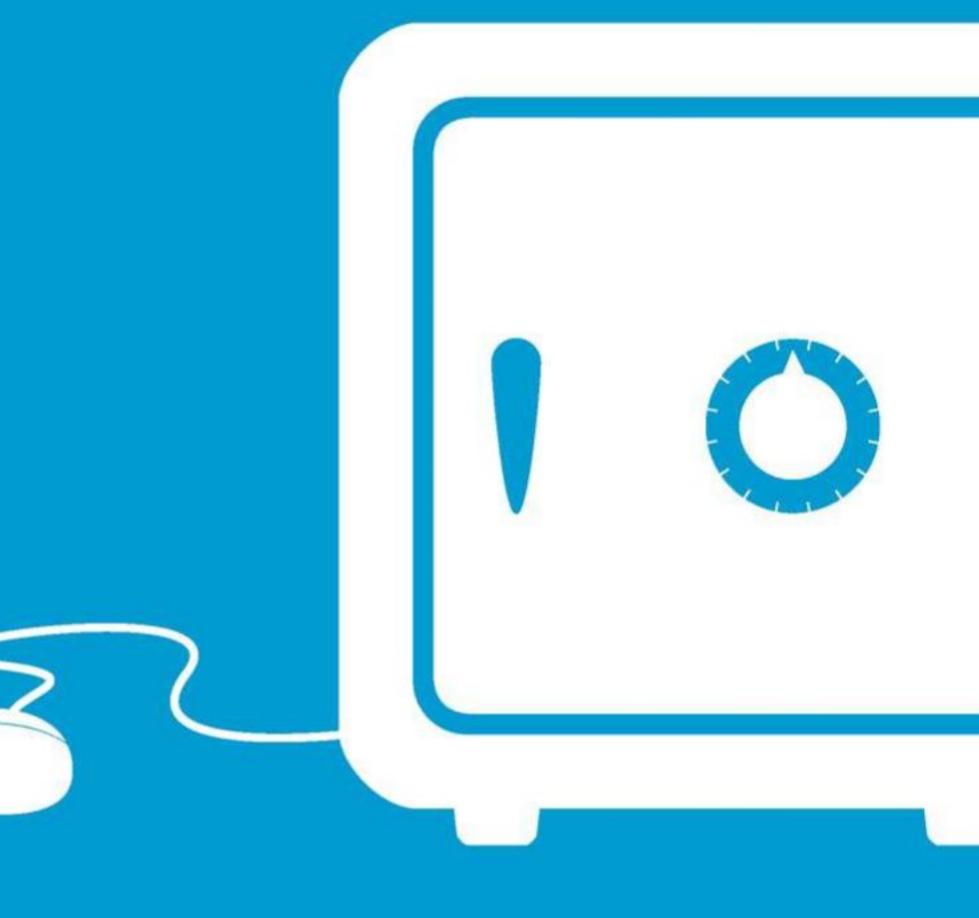




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Hybrid MacBooks

With the introduction of Windows 8 an exciting new form-factor will appear. The Samsung Ativ Smart PC Pro is both a touch-sensitive laptop and a tablet, which runs Windows 8 Pro. Unlike the Microsoft Surface RT tablet, it will run legacy desktop applications. Meanwhile, developers will write new versions of their software for use in the Modern UI.

If Apple were to release new MacBooks that utilise this form-factor, with full integration between Mountain Lion and iOS, it would be much better equipped to compete in what looks to be the biggest challenge it faces yet. Andrew Croydon

Baffling article

Your 4G LTE article in the Nov issue might as well have been written in Greek. Remember that the average guy on the street who buys your publication is not a tech nerd. Gordon Collingwood

pcadvisor.co.uk

Windows 8: What you think

Windows 8's launch is imminent, but is it right for you? We've looked in-depth at the new OS on page 82, and here is a collection of your own thoughts.

The biggest task ahead for Microsoft is not in selling Windows 8, but in educating existing and potential new customers how the OS can work for them. Having used it on a tablet and showing others how it works, it quickly became clear that it really is a brilliant OS. Microsoft's secret weapon in the Windows 8 concept is that it's the only OS that can meet any user's requirements. The focus is no longer on the device, but on a software solution that best fits your needs, and one that uses industry-standard connectivity. Windows 8 isn't perfect, but it's a lot better than everything else. WP7Mango

Many people say Windows RT tablets are useless, but around 80 percent need only Office, a browser, a music player and Wi-Fi on a hybrid tablet, enabling them to get some work done while listening to tunes and/or playing casual games. Price depending, it could be a winner. worleyeoe



I don't miss the Start button; the interface makes it redundant. You just hit Ctrl, F to search for an app, with no need to rummage through heavily populated menus. *CG*

It will be interesting to see how Windows 8 fares, given the plummeting popularity of Gnome 3 Shell and Ubuntu Unity in the Linux Desktop Environments. They're great for tablets and phones, but severely lacking on the desktop. It's no wonder people hang on to their older OSes, when there's no new functionality to justify an upgrade. Who wants a large-screen TV full of icons? It certainly isn't for me. Ray Woods

Flagged: Star letter

Forget 4G coverage, I can't get 3G

My wife and I are keen caravanners who enjoy touring England, but we like to keep in touch with our family and health providers. We use a 3G smartphone on a Vodafone contract, and an iPad with an EE SIM.

We always choose touring sites close to towns to facilitate shopping and, hopefully, benefit from good mobile communications, yet we are nearly always frustrated by the poor signal we receive. Surfing the net? Ha!

My teeth are gritted when I read the mouth-watering descriptions of the latest 3G and 4G handsets and tablets – for what good are these to the traveller in this benighted country? It seems to me that Britain needs a mobile communications network that's equivalent to Network Rail.

Why can't the various competing providers share a single comprehensive network of transmitting masts to serve the needs of everyone? *Robert Ford*

Marie Brewis, managing editor, replies: 4G will be available in only four cities at launch, Robert, although coverage is expected to reach 98 percent by 2014. We'll take an in-depth look at 4G connectivity in the next issue of PC Advisor.



Our Star letter writer wins a 128GB Crucial m4 SSD with Data Transfer Kit, worth £126. For your chance to win, tell us your thoughts on the latest tech issues:

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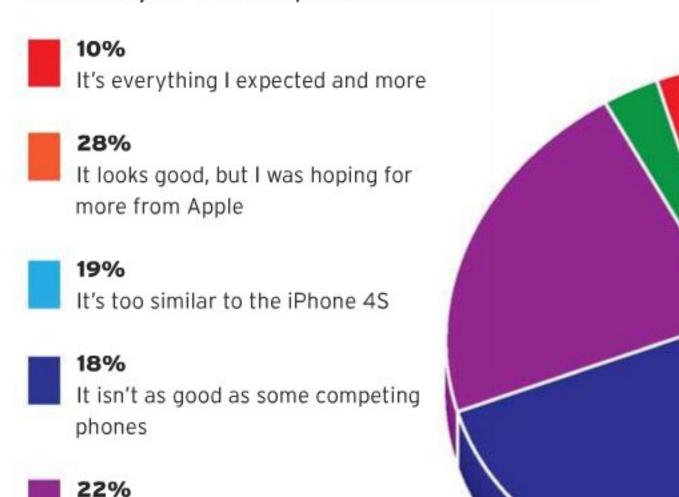


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pcadvisor.co.uk/polls

What are your initial impressions of the iPhone 5?



Based on 6,878 votes, tinyurl.com/cLc44uz

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Out the box and into the bin

I don't care

I don't know

Having queued until 2pm on launch day to get our hands on the iPhone 5, we couldn't wait to get it back to our lab and out of its box. Steve Mackie didn't share our enthusiasm. "Why bother? Put it straight in the bin," he wrote. And he wasn't the only one: "Meh," wrote Lorraine Marron, while Antony D'Andrea claimed it was "way behind some Android devices". Don't worry, Apple, Robert Follis "¡Wants" one.

Out of pocket for a free trial

When we revealed the truth about free software trials (see tinyurl.com/cj9hm9d), Jake Hancke offered his own advice. "I avoid 'trials' and always stop if anything 'free' asks for card details," he wrote.

How secure is remote support?

I want to use remote-support software, but I'm not sure how secure it is. Can you help? Marshall Macdonald

Marie Brewis, managing editor, replies: It really depends on the situation, Marshall. It's important that the connection between the two machines is secured with SSL encryption, and that you trust the person or company you're allowing access will not get up to no good with your data.

US Kindle Fire

I bought the Kindle Fire in the US, but live in Ireland. It won't let me download any games and films, despite the Fire now being available over here. Does anyone else have the same problem? Bernie McHugh

Jim Martin, features editor, replies: Sorry, Bernie: Amazon's official line is that you'll need a US billing address to purchase any content for a Kindle bought over there.

Personal Computer Advisor

Your website seems to have transmogrified into one for mobile phones rather than desktop PCs! Andrew Pestell

Marie Brewis, managing editor, replies: That's a fair point, Andrew, but the 'PC' in PC Advisor stands for 'personal computer', which is exactly what today's smartphones are. And as mobile computers continue to increase in popularity, it makes sense that we also up our coverage of them.

Join us online: pcadvisor.co.uk/forums



iPhone 5 initial impressions

Following its 21 September launch, the subject on everyone's lips right now is the iPhone 5. Here's a selection of your first impressions; read more at tinyurl.com/bsun4x5, and check out our reader poll, left.

Nontek I have the Samsung Galaxy S III, so I'm not overly impressed.

Flak999 I was really looking forward to the launch, but I can't see any reason to upgrade my iPhone 4S.

WhiteTruckMan I remember the days when new mobile phones actually got smaller.

alan14 I'll get excited about its 4G connectivity when I can get 3G.

Footloose1949 I'm somewhat underwhelmed by the iPhone 5: it's mutton dressed as lamb.

Woolwell I've been reading the reviews on Apple Maps. I was considering an iPhone 5; I'm not now.

wee eddle It's a beautiful-looking piece of kit, and if I wasn't such a miserable sod I'd buy one tomorrow.





Got a story? Contact Chris Martin chris_martin@pcadvisor.co.uk

4G IN THE UK

The UK's first 4G company, network and brand promises super-fast mobile connectivity in 16 cities by the end of the year

Everything Everywhere has switched on and a simple belief fourth-generation (4G) mobile broadband services in the UK under its new brand, EE.

The mobile operator, which owns Orange and T-Mobile, has launched 4G in London, Cardiff, Bristol and Birmingham for testing, and it has promised to connect a further 12 cities by the end of the year.

EE is a new company, network and brand in the UK, previously known as Everything Everywhere. At the beginning of September it said its 4G network will go fully live within the "coming weeks".

Olaf Swantee, CEO of EE, claims the launch of 4G is the "digital equivalent of the difference between steam and jet power" compared to previous services. He said that 4G will be available to 20 million people by Christmas.

"Our plans to revolutionise the UK communications market with a faster network and an exciting new brand for the digital age are built on solid investment

that customers deserve better," said Swantee.

EE is touting the fastest ever rollout of a mobile network, claiming that 70 percent of the UK will be catered for by the end of 2013, and 98 percent by the end of 2014.

The firm has decided not to drop the Orange and T-Mobile brands, which will continue to operate under their respective names, but their customers will use the EE network. However, Orange and T-Mobile customers will not have access to 4G services when the network becomes available - they must first upgrade to EE.

Mayor of London, Boris Johnson, declared the 4G network switch on and said: "We are now the city with the greatest 4G coverage anywhere in the world,"

EE uses 4G Long Term Evolution (LTE) technology, which has a theoretical speed of 100 megabits per second (Mbps).

However, the typical speed customers can expect to receive is between 8- and 12Mbps. EE said the typical maximum- and peak speeds are 40- and 64Mbps.

These super-fast speeds will enable customers to access the web on the go without waiting, download HD movies in minutes, watch live TV without buffering, and make high-quality video calls.

A number of 4G-enabled smartphones will be available from EE, including the Samsung Galaxy S III LTE, HTC One XL, Nokia Lumia 820 LTE, Nokia Lumia 920 LTE and Huawei Ascend P1 LTE. EE will be the only UK network to support 4G on Apple's iPhone 5. Pricing has yet to be confirmed.

EE also said it will launch a fibre-optic broadband service, which will be available to 11 million homes and offices by the end of the year. It is said to offer around 10 times faster speeds than today's average. Pricing for this service is also yet to be confirmed.

"We look forward to connecting the country with super-fast mobile speeds in the coming weeks, months and years," said Swantee.





Our plans to revolutionise the UK communications market with a faster network are built on a simple belief that customers deserve better



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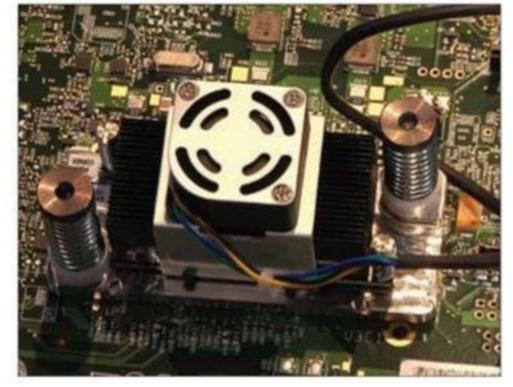
INTEL TO DOUBLE ULTRABOOK BATTERY LIFE

Forthcoming Haswell chips will deliver faster graphics and application speed, plus longer runtime

Ultrabook battery life is expected to double with forthcoming processors based on Intel's fourth-generation Haswell microarchitecture inside.

Haswell Core processors will also deliver much faster graphics- and application performance when they begin to surface in new Ultrabook designs next year, said Dadi Perlmutter, executive vice-president and general manager of the Intel Architecture Group.

Power consumption has been reduced in order for Haswell chips to be used in tablets, and some are said to consume less than 10W and deliver similar performance to Ivy Bridge chips that draw 17W. Haswell chips will deliver double the performance at the same power.



"We're going to nearly double battery life," said Kirk Skaugen, vice-president and general manager of the PC client group.

Ivy Bridge-powered Ultrabooks typically deliver battery life of between six- and

eight hours, but as many as 10 hours in some cases. The new chips could extend battery life to 12 hours for most models, and a potential maximum of 20 hours.

Perlmutter also said Haswell chips can deliver sufficiently fast performance for use in high-performance PCs, although the power consumed by these processors will be somewhat higher.

Intel has optimised Haswell for Win 8's power-management features, and also reduced leakage levels to improve battery life. It said Haswell-powered Ultrabooks will deliver 20 times more idle time than Ultrabooks with second-generation Sandy Bridge Core processors inside.

Ultrabooks sporting Haswell CPUs are expected to ship around mid-2013.

Barnes & Noble hopes to take on the Nexus 7

Nook HD and Nook HD+ tablets will be available in mid-November

Barnes & Noble has announced the Nook
HD and Nook HD+ tablets, available in
mid-November. The firm is hoping to
outdo the Google Nexus 7 Android tablet,
Kindle Fire HD and even the latest iPad.
Barnes & Noble also announced two
Simple Touch e-readers to rival the Kindle.

Both the Nook HD and Nook HD+ are Android 4.0 Ice Cream Sandwich tablets but, like the Kindle Fire range, have a heavily modified user interface. The US firm is touting better screens and lighter designs than its rivals at competitive price points. The Nook HD is a 7in tablet with a 1440x900 resolution, which is higher than the 1280x800 used by the Nexus 7 and Kindle Fire HD. The tablet is also lighter than its rivals, at 315g. It runs on an OMAP 4470 1.3GHz dual-core processor and has a 1GB RAM allocation.

Barnes & Noble said the Nook HD will come in two colours: smoke (aka grey) and snow (aka white). The tablet will cost £159 and £189 with 8GB and 16GB of storage respectively.

Keep an eye out in *PC Advisor* for our reviews of the Nook HD and HD+ tablets.



Amazon launches Cloud Player online storage service in the UK

iTunes Match rival stores music in the cloud for access on any web-connected device



Amazon has launched its Cloud Player service in the UK, allowing users to store online, and access their music from any web-connected device, including Android and

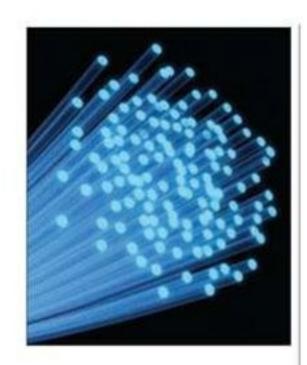
iOS tablets and smartphones, and PC and Mac browsers.

Greg Greeley, vice-president of retail at Amazon said: "The launch of Cloud Player in the UK means that customers can buy anywhere, play anywhere, and keep all their music in one place without the need for constant software updates, or drives and cables to move and manage their music."

Existing and future AmazonMP3 purchases will automatically be added to Cloud Player for streaming.

Users can also scan their iTunes or Windows Media Player libraries to match songs with a 20 million-track library.

The service is free for the first 250 tracks; a Premium service then costs £21.99 per year for 250,000 tracks.



Plusnet boosts fibre-optic speed

Plusnet has announced it is expanding its fibre-optic broadband offering with faster speeds and a new package. The service provider has launched an 'Extra Fibre' package, which touts speeds of up to 76Mbps for £19 per month. Plusnet has also increased upload speeds to 19.5Mbps for all its fibre-optic customers.

MORE: tinyurl.com/8erpthd

iPHONE 5 WON'T SUPPORT 02, VODAFONE 4G

Consumer choice for 4G connectivity on Apple's latest handset is limited

Apple's 4G-capable iPhone 5 will not be compatible with either O2 or Vodafone's 4G networks.

Purchasers of Apple's latest handset would be forgiven for thinking they would be able to use any 4G network they like, once the service becomes available in their area (see page 10). However, this is not the case: if you own an iPhone and want to use its 4G radio, your network options are limited.

The problem lies in the fact that EE has been allowed to roll out a 4G network ahead of the competition. The firm will initially be the only mobile operator to provide 4G mobile broadband to the iPhone 5.

EE's 4G network uses the 1,800MHz spectrum, in common with the iPhone 5. When O2 and Vodafone are allowed to bid for 4G spectrum, the 800MHz and 2.6GHz frequencies available to them will not be compatible with Apple's smartphone. Fourthgeneration networks to rival EE won't roll out until 2013.

Orange and T-Mobile customers won't be able to access 4G either. However, since both mobile operators are owned by EE, switching their service to its network should be painless.

Three is the exception here, having already scooped up parts of the 1,800MHz from EE. However, Three is unable to begin using the network until it acquires approval from Ofcom, which isn't likely until the second half of 2013.



Scots get £5m broadband fund

Rural communities in Scotland are set to benefit from a new £5m fund to help bring next-gen broadband to remote areas.

The fund was announced by Community Broadband Scotland (CBS). Communities can apply for seed funding under the initiative, which will enable them to obtain better access to the internet.

MORE: tinyurl.com/8gfgffg

UK BROADBAND SPEEDS RISE THANKS TO POWER USERS

UK average broadband speeds have taken a creditable leap in the past six months, rising from 7.6Mbps to 9Mbps, said communications regulator Ofcom.

Ofcom's bi-annual survey of broadband performance is keenly watched by industry spectators for improvements. Despite regular moans that the UK is falling behind international broadband speeds, the results of Ofcom's survey are promising.

The 9Mbps speed is a decent boost over the measly 3.6Mbps Ofcom found in November 2008. However, there are some issues.

For the first time the figures take into account high-speed broadband (30Mbps or above), which now accounts for 8 percent of the market. Given that this figure was just 2 percent in 2011, super-fast broadband appears to be on the rise. Most customers receive around 35Mbps.

Nevertheless, 68 percent of users remain stuck on broadband offering up to 10Mbps, often a lot less, which means the UK has simply gone from having lousy broadband to what is merely a mediocre experience.

Google fined £14m for Safari tracking

Google has been fined £14.4m for secretly tracking users of Apple's Safari web browser. The search giant broke privacy rules by overriding safeguard settings within Safari that are designed to prevent monitoring. Google has agreed to pay \$22.5m (£14.4m) to the US Federal Trade Commission, which described the penalty as a record sum for a violation.

MORE: tinyurl.com/d67o26b

02 pushes Ofcom to bring forward 4G auction



Doesn't want rival network EE to get a head start

O2 is in discussions with Ofcom to bring forward the much-anticipated 4G auction, in what will be seen as an attempt to fight off competition from rival brand EE.

EE has been granted regulatory approval to use its existing 1,800MHz spectrum to launch 4G services in the UK this year, several months ahead of its rivals that are currently waiting to bid for 800MHz and 2.6GHz spectrum.

The three other major UK mobile operators are locked in legal battles over the guidelines of the spectrum auction, and have been angered by EE's head start.

The operators are concerned that EE will attract many of their customers if it is the only operator on the market allowed to sell 4G services. These people would then likely be locked into 24-month contracts with the rival firm.

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VAIT and the majority of colour laser all-in-ones less than £340 excluding VAT, as of March 2011, based on market share as reported by IDC as of Q4 2010. CPP comparisons for laser supplies are based on published specifications of the manufacturers' highest capacity cartridges available, as reported by Context Information Services. HP Difficejet Pro CPP based on HP Officejet 950XL/951XL Ink Cartridges, estimated street price, published yield for colour prints and continuous printing. For details, see http://www.hp.com/eur/ojfacts.

WINDOWS 8 ON A PC 10 things we've learned

Matt Egan discusses his first impressions of Microsoft's latest operating system

I've been using the final version of Windows 8 on my work desktop PC for a few days now. There's so much talk of radical changes in Windows 8 that some readers may find the sharing of my real-world experience useful.

We snap up every version that is released, then install Windows 8 on as many devices as possible to get a feel for Microsoft's forthcoming operating system. Indeed, a Windows 8 tablet sits to my left as I type, and has done for several months. But there is a big difference between dabbling in an OS and relying on it for work purposes. So, some weeks ago, I crossed my fingers and upgraded my work PC.



Don't panic about the Modern user interface. The erstwhile 'Metro' interface may not be the radical departure you were expecting. Put simply: you may never see it on your desktop PC. During a fairly standard full day's work, I used email, a word processor, a web browser, spreadsheets, text documents, a photo editor and a presentation tool. Some were Microsoft's own products; many weren't. The only time I saw the Modern interface was when I thought: 'I haven't seen the Metro interface today' and went to check it out.

The Start screen and all the apps that share its Modern user interface are beautiful to look at and great fun to use, but it's important to note that you don't have to have anything to do with them. And you can forget all those people who say Windows 8 is

a touchscreen operating system. It is an OS designed to be used with a touchscreen, but that doesn't mean it won't work with mouse-and-keyboard input. In fact, it works in a similar way to Windows 7 - with some minor tweaks (see point number 3).

In a way, it's an indictment of the upgrade from Windows 7 to Windows 8. If you're upgrading a non-touchscreen machine that has a legacy of existing software installed, you'll almost inevitably find yourself in the traditional desktop environment most of the time. You'll use Windows 8 in much the same way as you use Windows 7, Vista or XP, and the shiny new Modern user interface will come into play only on occasion.

Microsoft needs to move people on to a touch-enabled OS with apps and live data tiles because that's the way mobile computing is headed. And Microsoft really needs to catch up. But it doesn't want to scare off existing Windows users and, from my experience, Windows 8 won't do that.

The low upgrade price of £25 reflects the fact that Microsoft hasn't made a compelling case for Windows 7 users to move up. Users of new PCs and laptops with Windows 8 preinstalled will find some new features, but nothing too terrifying. And the Windows Store will give Microsoft the opportunity to build an app ecosystem, while the more radical aspects of Windows 8 will be experienced principally by users of tablets and Ultrabooks, and all points in between.

My suspicion is that Windows 8 is a bridging operating system, which won't leave behind traditional desktop computer users, but just might grab a large slice of the tabletand mobile-computing markets. Whether that makes it a genius play or a horribly hobbled compromise remains to be seen.

...or the lack of the Start menu. If you're principally working in the new OS' traditional desktop environment, the most radical change will be the lack of a Start menu. It is indisputably disconcerting at the outset. I never realised how often I reached for the comfort blanket of the Start menu in my computing day - but it didn't take me too long to get over my initial panic.

Within the desktop environment you can access the Start screen and all its options by clicking the mouse at the bottom left. Go to the top right of your screen and you'll see the Settings icon and Charms bar, with the latter offering access to Search, Share, Devices, Start and Settings.

The loss of the Start menu makes things different, but not more difficult. And the new way of doing things ties in the desktop with the rest of Windows 8. That may be the point.

You should learn some shortcuts. Using Windows 8 makes a lot more sense when you start utilising its shortcuts. We've listed a whole bunch in our Windows 8 guide (see page 82), and won't repeat them here, save for a few of our favourites.

Windows, Q is a great way to search your system. Using it to search and then launch an application makes you forget that the Start menu ever existed. Simply by hitting that combination, typing 'Op' and hitting Return I can launch Opera. It's very convenient.

Windows, I takes you to the Settings interface; Windows, X brings up the Admin menu; Windows, D opens or closes the desktop. If you're finding the new OS a challenge, learn some shortcuts. It's a slightly different mindset to using Windows 7, Vista or XP, but it is a fun, efficient way to work.

It feels zippy. And Windows 8 works fast - or, at least, it seems to. Microsoft has made great play of the fact that Windows 8 has the same system requirements as Windows 7, and it's paid off.

Windows 8 seems to have given our three-year-old computer a new lease of life. It's not an earth-shattering change, but everything feels slick and smooth, and fast. More importantly, there's been no instability and - so far - no incompatibility with software or hardware.

It looks great. This may seem an odd thing to say after my point about how rarely the Modern user interface comes in to play, but it's relevant nonetheless. The prevailing wisdom is that the desktop part of Windows 8 is just Windows 7 without the Start menu. That's not entirely true. The visual difference is subtle, but impressive. Gone is the showy transparency of Aero, to be replaced by a more sober, but stylish trim. Transitions are similar, and the entire colour scheme seems to fit together better.

Don't just take my word for it: a Mac-loving, OS X-toting colleague leaned over, looked at my screen and said: "Is that Windows 8? It looks great. Really professional." Reader, at the time I was merely looking at a Word document, a spreadsheet and the PC Advisor website. This is high praise indeed from an Apple fan.

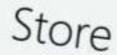


Windows Store may not be all that important to you (yet). The Windows Store is one of the obvious benefits you can reap from upgrading to Windows 8. It's a secure and simple place in which you can find and install trusted applications. It's also key to Microsoft's strategy with Windows 8: get people buying native Windows software and not only do you generate a nice line in additional income, but you also guarantee customer loyalty. No-one would ditch their iPhone if it meant having to re-buy all their apps for a different platform, and the same is true here.

But, right now, for the average PC user the Windows Store may be something of an irrelevance. You can continue to buy and install software in exactly the same way you always have, as well as in the Windows Store. And, to be frank, there's not a great deal here you'd want to buy... yet.

In time, a market that allows software makers to sell direct to Windows users with all kinds of devices is bound to attract great apps. And the convenience of buying direct from your computer, with no fear of being ripped off or scammed, will be compelling for many Windows users. But it needn't be a big deal to you today.

Charms are useful, but not crucial. Much has been made by Microsoft of the 'contract' it has made with all Windows users: in the





same part of every screen in every app you'll be able to access the Charms bar. The Charms bar offers access to all the controls you need for both application and PC.

That's great, but, as I've outlined above, Windows 8 is not so tough to get to know that the Charms bar is required as a safety net. There are at least three other ways to get to Settings, for instance, and as you grow used to shortcuts and Windows 8 in general, the Charms become useful, but not critical.

You could save on security software. This is not our official advice, but an option for the cost-conscious user. Windows 8 comes with antivirus preinstalled, as well as the usual firewall and so on. Although you may get better protection by installing a separate security suite, you will have adequate protection with Windows 8 alone.

What's interesting, and what I'm intrigued to test, is the claim made to me by a representative of a well-known security

Windows STORE

software company that paid-for security software may speed up Windows 8. His argument was that Microsoft's own security software slows down the OS. Games >

Games for you

Discover a new favouris

I can't tell the difference on my work machine because we have corporate antivirus, but I will be going without when I install the OS at home. Considering the current cost of security software, it may be a risk worth taking.

You don't need to upgrade, but it won't hurt if you do. I've covered this already, but it's worth reiterating: for current users of Windows 7 PCs and laptops, who don't want to use touch, Windows 8 is not a must-have upgrade. But, at £25, it is a relatively pain-free transition. Having made the jump, I certainly wouldn't go back. Read our Eight reasons to upgrade to Windows 8 at tinyurl.com/73g6sp5.

We can't wait to try this on new devices. More importantly, I can't wait to get stuck into Windows 8 running on ARM- and Intel-powered tablets, laptops, all-in-ones and hybrid devices - those that comprise any, some or all of the above. Hardware manufacturers have been offered a challenge by Microsoft: build interesting, desirable and useful personal computing devices that can utilise the more radical new features. Whether Windows 8 becomes a triumph or a disaster will largely be decided by the hardware.

In the meantime, running Windows 8 on a desktop computer is an interesting diversion, but far from the radical upgrade Microsoft is pushing for.



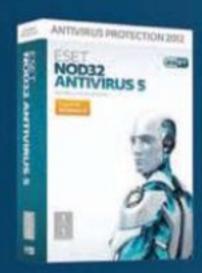
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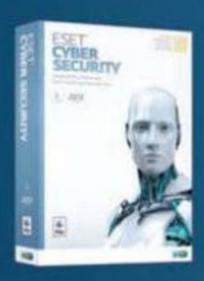
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Nokia's future hangs on Windows Phone 8

Mikael Ricknäs wonders whether Windows Phone 8 has what it takes to help Nokia increase its sales amidst the deafening noise created by the iPhone 5

okia and Microsoft recently launched Nokia's second-generation Windows phones. Based on Windows Phone 8, the Lumia 920 and Lumia 820 will each have a new Start screen, dual-core processors and improved cameras.

For Nokia, the launch of its first smartphones based on Windows Phone 8 is a make-or-break moment; the success or failure of the handsets is also massively important to Microsoft, according to Ben Wood, director of research at CCS Insight.

"The challenge Microsoft faces with the timing of the launch is that it risks being drowned out by the deafening noise generated by iPhone 5. That is going to be a challenge for Microsoft and its licensees, the most important of which is Nokia," said Wood.

The iPhone 5 was announced on 12 Sep (read our full review on page 30), while Nokia got out slightly earlier with its two Windows Phone 8 handsets, revealed on 6 Sep.

Windows Phone specs

The Lumia 920 has a 1.5GHz Snapdragon S4 dual-core processor and a 4.5in (1280x768, 332ppi) display. The Lumia 820 is slightly smaller with a 4.3in screen, which offers an 800x480-pixel resolution (217ppi).

The Finnish phone maker has also put an 8.7Mp PureView-branded camera in the Lumia 920 - first seen in its 41Mp Nokia 808, which runs the Symbian OS.

Of course, the megapixel count isn't the only important feature of a digital camera. "The future of photography will be about how you use pixels, optics and image processing together," said Nokia's Damian Dinning. "PureView is about blending optics, pixels and image processing in new and

different ways to allow you to do things you otherwise cannot."

Wow factor

Images of the new Windows 8 handsets and accessories, including a wireless

charger, were published on social media prior to Nokia's official launch. Fortunately, they created exactly the buzz the two companies had hoped for.

"The phones need to have a wow factor, which generates the kind of buzz that Samsung, Apple and others have been able to generate with new phone launches," said Wood, speaking before the unveiling. "If they fail to get that reaction, it doesn't bode well for the future of the portfolio."

Changes in version 8

The success of Nokia's phones will also depend on users taking Windows Phone 8 to heart.

One of the most important new features in Windows Phone 8 is the revised Start screen. It gives users more flexibility and control over how the live tiles look and work, allowing them to change the size of a tile between small, medium and large.

Smartphones based on Windows Phone 8 can be equipped with HD screens, multicore processors, NFC and microSD card slots, which will help the platform catch up with its competitors on the hardware front.

When Nokia entered the Windows Phone space, development of the current version of the OS had already started. Being more involved in the development of Windows Phone 8 will allow the company to develop better products, according to Nokia.

While the company has differentiated its existing products with design and unique apps, Nokia thinks it can do a lot better than that, CEO Stephen Elop said earlier this year.

In 2010, Nokia's smartphone sales averaged well over 20 million per quarter. While the overall market has grown significantly, Nokia sold only 10.2 million smartphones during the second quarter of 2012, most of which were Symbian handsets.

But for Nokia to grow its Windows Phone sales, which it needs to do by many millions, it needs more than just new high-end devices, according to Francisco Jeronimo, research manager at IDC.

"It is very important to see a wider choice of phones based on Windows Phone at a lower price point. Nokia has started growing the portfolio and lowering the price with the Lumia 610 and 710, but much more is needed. Android started to grow only when a wider choice became available," he said.



SAMSUNG ATIV S

WINDOWS PHONE 8 COMPETITION

Nokia was not the first smartphone maker to launch a Windows Phone 8 handset – that credit goes to Samsung, with its Ativ S. Samsung's Windows phone has a 4.8in HD Super AMOLED display and a 1.5GHz dual-core processor. The phone is 8.7mm thick, has NFC built-in, and is able to access the internet over HSPA+ at 42 megabits per second (Mbps).

The Ativ S was the first in a big line-up of new hardware that's coming with Windows Phone 8, according to Microsoft. HTC and Huawei are also expected to launch Windows Phone 8 handsets.

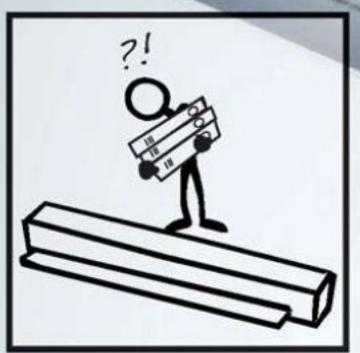
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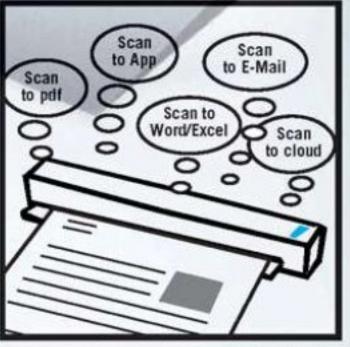




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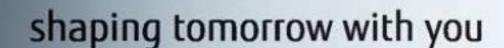
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ARM chip makers fight for Windows 8 tablets

Agam Shah explains how Samsung and Dell have announced Windows RT tablets with ARM-based Qualcomm chips, bringing competition to nVidia

indows RT tablets announced at the IFA tradeshow in Berlin have intensified competition among ARM-based chip makers. They are adding unique capabilities to their processors so that tablets become more attractive to buyers based on performance and features.

Samsung and Dell announced tablets with Qualcomm's dual-core Snapdragon S4 processor, which is built on ARM architecture. These are the first Windows RT tablets using Qualcomm's chips. Tablets announced earlier in the year, such as Microsoft's Surface and Asustek's Vivo Tab RT, are based on nVidia's quad-core Tegra 3 processor.

Microsoft is working only with ARM-based chip makers Qualcomm, nVidia and Texas Instruments for Windows RT on tablets and

PCs. Toshiba previously showed a Windows RT tablet based on Texas Instruments' Omap processor, but the device was scrapped due to a component shortage.

Microsoft has also announced Windows 8 for tablets and PCs based on Intel and AMD chips. The Windows 8 operating system will become available on 26 October, at which time devices such as tablets and hybrid laptops are also expected to ship.

Key differences

Hardware makers are offering unique features in Windows RT devices, and key differentiators could be connectivity, performance and form-factors, said Dean McCarron, principal analyst at Mercury Research.

Windows RT devices based on Qualcomm's Snapdragon S4 chip may provide a better blend of performance and connectivity, while nVidia's quad-core Tegra 3 processor may deliver faster overall performance and better graphics, McCarron said. ARM processors are power-efficient and will bring long battery life to Windows RT devices, he added.

Windows RT has the look and feel of the standard Windows 8 OS, but Microsoft says it's been re-engineered with mobile features such as power consumption and instant connectivity in mind. ARM processors are used in most smartphones and tablets that ship today, and Qualcomm and nVidia are pitching different features on their chips to capture a larger share of the market.

QUALCOMM 1/6 NVIDIA TABLETS







Qualcomm Snapdragon S4

Qualcomm wants to bring smartphone features to Windows RT tablets with its S4 chips, said Luis Pineda, senior vice-president of product management. The chip in the Samsung and Dell tablets will bring a range of cellular and internet connectivity features, while also enabling long battery life.

The S4 chip being used in the tablets has an integrated 3G/4G radio, Pineda said. The S4 chips also have a powerful graphics core, and the integration of all key components helps enable thin and light devices. Qualcomm has also announced a quad-core S4 chip, for improved tablet performance.

nVidia Tegra 3

Tegra will be the only quad-core chip available for Windows RT devices this year, and great graphics performance will bring console-quality gaming to devices, said an

nVidia spokesman. The Tegra 3 processor is already being used in high-performance gaming tablets. nVidia in the future will offer chips with integrated radios, but for now is working with partners to offer a separate 3G/4G radio on chips.

Windows 8 vs RT

While chip makers in the ARM camp are watching each other closely, the companies also have to contend with x86 processors from Intel and AMD, on which the Windows OS has grown up. Beta testers have played with Windows 8 on x86 tablets and PCs for months now, giving it a leg up over Windows RT, which has been shown as a product in development via a few tightly monitored tablet demonstrations at tradeshows.

The first choice buyers will make is whether they want Windows 8 or Windows RT, after which they will decide on the

device, said Nathan Brookwood, principal analyst at Insight 64.

Both the operating systems have a similar touch user interface, but existing Windows applications will not work on Windows RT devices. Microsoft is trying to make RT attractive to new buyers by bundling desktop Office productivity applications.

Some long-term Windows users may want Windows 8 on Intel chips for access to legacy x86 applications, which by default users have to leave behind when going to RT, Brookwood said.

Microsoft has kept Windows RT under tight wraps, which has frustrated device and chip makers, analysts said. But the success of Windows RT devices will ultimately depend on the price and the features buyers identify with.

"It's hard to say with Windows RT because it hasn't yet happened," McCarron said. 🗵





We present our pick of the latest handheld computers, from the Apple iPhone 5 to Microsoft Surface RT

CHRIS MARTIN



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>> Asus Vivo Tab RT

Tablet

Asus' Vivo Tab RT is an nVidia Tegra 3-powered Windows 8 RT tablet. Like the firm's Transformer range, the Vivo Tab RT has a keyboard docking station that turns it into a netbook-style laptop. It has a 10.1in display and built-in NFC technology.

Price TBC uk.asus.com



Amazon Kindle Fire HD

Tablet

The Kindle Fire is finally to arrive in the UK, in HD form. This 7in tablet has a 1.2GHz dual-core processor and runs a custom version of Android. Amazon offers twice the amount of internal storage as Google's Nexus 7 at the same price points.

£159 inc VAT amazon.co.uk





Samsung Ativ S 🔻

Smartphone

Samsung's Ativ S is the firm's first Windows Phone 8 handset. It has a large 4.8in Super AMOLED screen and an 8Mp camera. Samsung says it'll be good for both work and entertainment.

Price TBC

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Motorola Razr i >>>



Smartphone

The Razr i is the first fruit of the Motorola-Intel partnership. It has a 2GHz Intel Atom processor and, despite its compact size, offers a 4.3in screen. The Razr i is built from sturdy materials, including Corning Gorilla Glass and Kevlar.

£345 inc VAT motorola.co.uk



Samsung Galaxy Camera

Digital camera

If you want a camera running Android then the Galaxy Camera is what you've been waiting for. It has a 16Mp sensor and runs Android 4.1 Jelly Bean. Wi-Fi and 3G connectivity mean you can easily upload pictures to the internet.

£400 inc VAT samsung.com/uk



Sony Reader PRS-T2 >>>



E-book reader

The slim and lightweight Reader PRS-T2 is Sony's latest e-reader. The PRS-T2 features a 6in paper-like E lnk Pearl anti-glare touchscreen. It offers up to eight weeks of battery life and space for 1,200 e-books.

£119 inc VAT

sony.co.uk



Sony Xperia Tablet S <<



Tablet

Sony's latest tablet has a slim aluminium design and a splashproof screen. The Xperia Tablet S is made for the living room with its infrared sensor and DLNA for controlling and sharing content on devices such as the television.

£330 inc VAT

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Chips off a new block

Time was when the processor wars raged between Intel and AMD, two brands competing to make the best x86 chips to power Windows PCs. Intel has in essence won that battle, delivering its popular Core i-series processors to the majority of consumer laptops and desktops. We rarely see AMD chips in high-performance laptops, although its chips do feature in low-cost sub-£500 laptops.

New skirmishes are now breaking out in the smartphone and tablet mobile world. The low-power ARM architecture dominates this landscape – at the moment, at least, although Intel is determined to make its presence known by doggedly reducing the size and power requirements of the ageing PC chip architecture.

Intel's first real push into this space is with the smallest Intel
Atom yet: the Z2460 is a complete system on a chip (SoC). It debuts
in the Orange San Diego smartphone, standing out from a group of
ARM-driven mid-range Android phones we test from page 54.

Right now, the draw of Intel's lowest-power chips is still too high for decent longevity on phones. Next year's Z2580 looks interesting, although it won't necessarily help here: it majors on being a dual-rather than single-core chip, adding greater performance. But Intel's chip is already quick enough, thanks, outpacing most current ARM chips. It's low thermal design power (TDP) that counts, though.

Back with ARM, a new chip designer has shown its hand. Many commentators pegged Apple as little more than a rebrander of reference ARM designs, but its A6 processor may be far more advanced than first meets the eye.

It's still seems to be fabricated by Samsung Semiconductor, using a 32nm process, and may use elements of ARM's next-gen Cortex-A15 architecture that promises a 40 percent performance improvement. But X-rays suggest a proprietary realisation of ARM, probably using ideas from gifted chip designers Apple has hired in recent years.



All we know is that it's the fastest mobile processor to date, and significantly outpaces its rivals. All this while still affording great battery life to the iPhone 5 in which it hides.

Samsung, naturally, has processor plans of its own. Its next revision of the Exynos chip may see it close this new gap.

Competition here is healthy, especially now that Texas Instruments is diverting away its focus from smartphone OMAP designs, which are popular in many budget Android handsets.

The rewards should trickle down to us users, not just in greater performance, but in ever more power-efficient designs. The mobile war is really won by whoever's handset is still running after several days of active use.

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- apple.com/uk
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Specification

Touchscreen smartphone; 4in (640x1136) 16:9 capacitive IPS touchscreen, aluminosilicate glass, with oleophobic coating; 326dpi; 800:1 contrast ratio, 500cd/m2 brightness; UMTS/ HSPA+/DC-HSDPA (850/900/1,900/ 2,100MHz); GSM/EDGE (850/900/1,800/1,900MHz); LTE (Bands 1, 3, 5); 16/32/64GB Nand flash storage; 1GHz Apple A6 dual-core processor; 1GB RAM; 802.11a/b/g/n; Bluetooth 4.0; rear-facing 8Mp still/1920x1080 video camera; front-facing 1.2Mp (1280x720) video camera; white LED flash; assisted GPS; three-axis gyroscope; proximity sensor; ambient light sensor; digital compass; three mics; speaker; 3.5mm stereo headphone/ mic jack; EarPod earphones with remote and mic; 8-pin Lightning connector; USB power adaptor; 5.45Wh lithium-ion battery; 123.9x58.7x7.7mm; 115g

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

SMARTPHONE

Apple iPhone 5

PC ADVISOR GOLD

Instead of the ground-up redesign that some pundits were predicting, the Apple iPhone 5 is just a rehash of the old iPhone 4. At least, that's the easy verdict. The iPhone 5 presents itself as the familiar metal-banded slab, only stretched out and slimmed down.

Because so many innovations have steadily trickled into the design over the years, we eagerly await each annual update, expecting more and more again. It's easy to dismiss the iPhone 5 as a taller 4S, with 4G that doesn't currently work in the UK (see page 10) and a new dock port that obsoletes other hardware expecting the classic version.

Features

The stand-out outward attribute of the iPhone 5 is its larger screen. It's not a huge expanse of space in both directions, as Google's hardware friends have uniformly decided is the way to sway tech-loving buyers - notably the Samsung Galaxy S III with its extravagant 4.8in display. The iPhone 5 raises its screen estate by simply extending the screen's height by 14mm, keeping the width identical. The new 640x1136-pixel display is still an IPS panel, and even richer in colour saturation, while looking more natural than the slightly cloying OLED alternatives. And importantly, it still has the pixelhiding Retina resolution of 326ppi.

Operating the iPhone 5 with its longer screen is a doddle. Unlike with semi-tablet sized phones with 4.5in-plus screens, you can reach the whole screen to easily operate it using just one hand.

Pick up an iPhone 5, though, and you'll notice a new featherweight quality. Down at 115g against the 4S' 141g, it feels wafer-like - almost too light, in fact. Beautifully balanced, its mass is evenly distributed to offset any bias toward top or bottom.

The build quality has been described as jewel-like with reason.



The move to aluminium construction may be a step in the right direction, though. Not only is it light, but it provides a more easily handled object for the fingertips. A hardened glass front and back didn't just lend the iPhone 4 chic obsidian bling; they could make the handset a slippery slab. The iPhone 5 is now built around an anodised aluminium backplate that allows a tad more purchase in the hand.

Durability may suffer, though. With the black model in particular, daily use is likely to create small nicks in the anodised coating. To keep the handset pristine a case is as useful as ever.

In white, the iPhone 5 looks less juvenile than the 4S blanc; diamond-polished bevelled edges and a satin aluminium back now make it much more unisex. In black, it's pure stealth-bomber, mixing a brushed-metal, slate-anodised back with mirror-polished front bevels and a gleaming black glass front.

This tech user isn't so convinced by the drive toward thin handsets,

though. Given the still

all too short runtime of today's handsets (and that includes the iPhone, despite it outlasting most Android



smartphones), we would rather keep the 9.5mm dimensions and 141g weight of the iPhone 4 if it meant using the space and weight wisely, with a battery that can comfortably last three rather than two days.

A phone as light as the iPhone 5 also seems to create no sensation of its presence in the pocket. It's a matter of taste whether you like this idea or prefer to have some subtle clue that the phone is still there.

The iPhone 5 carries the flag for the newly born iOS 6.0 operating system (reviewed on page 45). This gently tweaked system creates continuity from the user experience of previous iPhones. Alongside the metal-banded frame, the now-familiar interface is a key point of reference for the mainstream audience, copied the world over with varying degrees of accuracy and resulting litigation.

Cameras fore and aft

On the hardware side, the rear camera is much the same as that found in the iPhone 4S. It's able to shoot full-HD video at 30fps, with software image stabilisation. The change here is a new lens cover, now crafted from sapphire crystal for improved optical clarity and hopefully scratch-resistance.





The front camera is now up to 1280x720 resolution, which enables Apple's FaceTime video-chat service to operate in HD mode.

Attention to the human-device interface is found in various new audio systems, starting with an intriguing triple-mic assembly. This promises better fidelity through some kind of beamforming, a variation on earlier two-mic noise cancelling.

As well as a new audio co-processor tucked inside, we're told there's support for Wideband audio, which uses more advanced data comms technology. This should expand the frequency range of the spoken voice to make conversation more life-like. Orange is the only UK operator currently offering Wideband audio, and compatible handsets are required at both ends of the call.

The Wideband audio tech isn't an Apple first but, given the handset's impeding popularity, it should encourage more networks to look into enabling the service.

Lightning

Updating the standard 30-pin dock connector that's been so widely tapped into over the past nine years was always going to upset some people. Thankfully, its replacement looks to be future-proofed

and should survive just as long in the quick-changing world of tech.

The supplied Lightning cable supports USB 2.0 rather than 3.0, although since iCloud synching came online there's now less need to transfer files via cable. It's possible that future iterations of the cable may introduce USB 3.0, allowing the connection to live up to its 'Lightning' name.

The Lightning plug itself is reversible, and has pin contacts that can adapt to the needs of the device. In other words, it should adapt to the changing needs of users and their devices in the next few years to come.

New SIM

The iPhone 5 takes an even smaller SIM than the already diminutive micro-SIM.

The required nano-SIM will be a minor inconvenient speed bump to quick and easy switching until you've traded in your current SIM. Cutting down a micro-SIM may just be possible, but it is not advised.



Performance

Our lab tests have confirmed that everything about the iPhone 5's performance has been augmented. It's not just a bit faster - it's 100 percent or more quicker in processor speed. Similarly, in the graphics room, gamesters or anyone who needs greaselightning visuals will be beaming from ear to ear at the upgrade in sheer speed.

A6 processor

iPhone

We can't honestly say that we have on any day picked up an iPhone 4 or 4S and thought 'this is a great phone, but I just

> wish it could be a little bit faster'. Yet the new-found double-speed action brings you a device that's really just moreish to use.

Apple is playing coy in the numbers game over the new A6 chip, although technicians who have dissected the phone are pointing to a much bigger breakthrough than may be obvious.

The A6 appears to be Apple's own in-house chip design. It uses the ARM architecture, but not as prèt-a-porter as most smartphone makers typically specify. It's still a dual-core processor, like that found in the 4S, but the memory has been doubled to 1GB.

Crucially, the architecture may be more like the as yet unreleased ARM Cortex-A15

reference design, rather than the Cortex-A9 that's been staking out the ground for leading smartphone designs. The graphics engine now appears to be a tri-core chip, too.

Clocked at around 1.3GHz, the A6 chip may appear old-hat against the dual-core quad-cores used in Android phones. But in our benchmarks, it's the fastest there is.

Benchmark results

Apple says the new A6 processor is up to twice as fast as the A5 used by the iPhone 4S. Our benchmarks of processor and memory performance with Geekbench 2 suggest that Apple has been rather economical with the truth, understating the staggering increase in speed.

The iPhone 5 scored 1,650 points in Geekbench 2, compared to the 4S' score of 632. That's more than 2.6 times faster.

In gaming performance, the iPhone 5 was able to run the Egypt HD test within the GLBenchmark 2.5 benchmark at 38fps, which is exactly twice the framerate of the iPhone 4S' 19fps.

Browsing the web is super-speedy. When we tested the JavaScript rendering speed, we found the iPhone 5 to again be around twice as fast. It scored 903ms in the SunSpider test, against 1,891ms for an iPhone 4S (both using iOS 6.0).

In general use, the iPhone 5 feels incredibly snappy, able to open apps and load websites quicker than ever before. We haven't tried EE's new LTE service, but even web browsing over 3G feels appreciably faster.

And in our tests, it was. Not just JavaScript, but 3G cellular is much quicker - almost twice the speed.

We took a series of network speed tests over a short time period from the same location, using the same Three nano-SIM. From our office location in London, the iPhone 4S averaged 7.9 megabits per second (Mbps) download, and 2.3Mbps upload. The peak speed recorded in any single run was 8.8Mbps.

The iPhone 5 is helped along by not just a faster processor, but a more modern RF chipset for cellular data. It averaged 13.3Mbps download and 2.5Mbps upload. The peak speed hit a giddy 16.9Mbps.

At press time, the only aspect we were unable to objectively test is the new iPhone's battery life. Anecdotally, we have been seeing in excess of two days' life, suggesting that all the extra power is not having a major effect on runtime.

Verdict

The iPhone 5 really is much more than a tall iPhone 4S with a new plug. The people demand a revolution every upgrade season, and Apple has simply supplied what the people need, rather than what they say they want. And that's a powerful evolution on the theme of iPhone, which is currently putting the competition back on the starting blocks.

⋈ Andrew Harrison

£749 inc VAT

Contact

toshiba.co.uk

Read more

■ tinyurl.com/d69ygow

Specification

42in LCD TV; 1920x1080; 7,000,000:1 specified contrast ratio; 360cd/m² brightness; stereo speakers with 2x 10W amplifier; Freeview HD, DVB-S2 tuners; seven-day EPG; 4x HDMI, 1x Scart; 1x Component; phono stereo input; digital audio coaxial S/PDIF; headphone jack; 10/100 ethernet; 802.11n via USB adaptor; 2x USB 2.0; CI slot; 122W average power consumption; 995x579x34.7mm (w/o stand); 12.9kg



42in TV

Toshiba 42VL963

Toshiba's VL963 range of TVs is aimed at those who want a large screen that doesn't come with a double-take price tag. They're internet-enabled, offer passivepolarised 3D and are reassuringly heavy. The 42in 42VL963 reviewed here is also available as the 47in VL963 and the 55in 55VL963.

The cosmetics betray the hand of Danish design group Jacob Jensen and are suitably modernistic: all edge-to-edge glass trimmed with a metal frame. When switched off there's no obvious bezel; it looks cool but, inevitably, is reflective.

The screen, which has both standard Freeview HD and generic DVB-C2 satellite tuners, offers four HDMI, Scart, component, VGA and phono stereo inputs, plus a digital optical audio output.

There's also ethernet and two side-mounted USB ports. You can timeshift to an external USB hard drive, but there's no integrated Wi-Fi.

The user interface is attractive and fun to use, but Toshiba's online portal is less easy to navigate. It's a senseless collection of hived off areas, dubbed Places. The choice of content is limited to some subscription IPTV services, social media clients and free stalwarts BBC iPlayer, Dailymotion and YouTube.

Thankfully, you can at least get to iPlayer and YouTube directly from the main menu, without have to load Places.

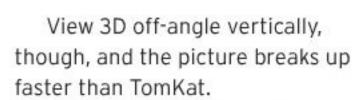
Multimedia support from USB is accomplished. The set's media player coped with almost everything we threw at it, including MKV, WMV, AVI, Mpeg, MOV and VOB, MP3. WMA, WAV and AAC audio also played. But it's a different story across a network; here, the only thing the VL963 plays is dumb.

With a firmware upgrade the TV also offers WiDi, allowing a wireless connection with compatible laptops. However, before this can work, you'll need to invest in a dedicated Toshiba Wi-Fi USB dongle.

The image quality is respectable. Pictures are dynamic, with smooth, deep blacks and bold colours.

The latest iteration of the brand's Resolution+ image upscaler does a good job with standard-definition content, but motion resolution is marred by stuttering artefacts created by the ARM400 Active Motion processor. This is not a screen for sports fans.

The set's 3D performance gets a thumbs-up though. Four pairs of flicker-free polarising glasses are provided. Viewed square-on, the effect is impressive.



The screen's audio performance is surprisingly effective. The 2x10W amplification is adequate for casual listening, and the soundstage isn't insultingly thin. An Audyssey Premium Television processor helps plump things out.

Verdict

There's much to like about the 42VL963. The design is slick, the feature spread is right on the money, and there are online extras. But there are caveats: Places is an unsatisfying source of IPTV, network media playback is useless and WiDi demands investment in a USB dongle. Steve May

37in TV

Panasonic TX-L37ET5

Contact

panasonic.co.uk Read more

£699 inc VAT

tinyurl.com/d5p9g5s

Specification

37in LCD TV; 1920x1080; 2x 10W amp; Freeview HD tuner; seven-day EPG; 4x HDMI; 802.11n; 3x USB 2.0; 43W consumption; 11.5kg; 874x534x52mm (w/o stand)



This Panasonic TX-L37ET5 is a high-spec, yet relatively affordable, 3D-enabled Freeview HD TV with internet connectivity.

Unlike other Smart Viera sets from the brand, it uses passivepolarised 3D rather than full-HD Active Shutter technology. This is because it's built around an unglamorous 120Hz panel, which is too slow for decent Active Shutter performance.

Connectivity is generous. There are four HDMI ports, one of which is audio return channel (ARC)compliant, able to send sound from the TV to an AV receiver. You also get three USB, ethernet, an optical digital audio output and a PC input. Scart and component video are supported via supplied adaptors, and there's an SD card reader. A CI slot handles subscription services and Wi-Fi is built-in.

The set's USB media reader is compatible with popular video file types, including MKV. Across a network, when streaming from a NAS, it is less adept.

Despite its low price, the TV is well built and a glossy grey bezel adds a premium touch. But while the bezel is a trim 25mm, the set is deeper than you might imagine. Still, table-mounted and viewed straight on, you can't tell.

The graphical user interface is easy to live with. Panasonic no longer injects advertising into its EPG, but there's no live TV window or ongoing audio either. For the visually impaired, the set has a commendable voice-guidance feature, which narrates the operation of basic features.

The TX-L37ET5 is a good choice if access to streaming internet TV services is a priority. The Viera Connect portal offers BBC iPlayer, YouTube, BBC News, Eurosport, Netflix, Acetrax, Fetch TV, Dailymotion, CNBC, iConcerts and Aupeo, among others.

You'll also find social media clients for Facebook, Twitter and Picasa, and Skype is built in, too. You can customise the landing page



£50 inc VAT

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dlink.com/uk

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tinyurl.com/bogmro9

Specification

Wireless router: 802.11b/g/n; 2.4GHz; 4x gigabit LAN; 1x gigabit WAN: USB 2.0: Wi-Fi Protected Access (WPA/WPA2); WPS; IPv6; remote cloud access storage; remote cloud router access control; 111x93x145mm

Build: Features: Performance: ** *** Value:

WIRELESS ROUTER

D-Link DIR-636L

D-Link's DIR-636L is an interesting entry to the router market. It has several high-end features, but also some low-budget hardware and a price tag to match.

The first thing that stands out about the DIR-636L is its styling. This rather handsome shiny monolithic cylinder is a welcome contrast to the standard flat black or grey boxes we typically see.

The D-Link router also contains no fans, which makes it blissfully silent in operation.

The front has power and WAN status lights, and there are four gigabit ethernet connectors and a single WAN connector. A USB 2.0 port is also present, allowing you to hook up a hard drive or printer.

The D-Link is a 2.4GHz-only router, meaning you won't be able to access the 5GHz channel to boost close-range wireless performance. Of course, this is to be expected in a router that costs £50. Given the low price, some of the features D-Link has managed to stuff in, which aren't present on routers costing twice the price, are pretty amazing.

The most vaunted feature is cloud access. This allows you to connect the router to a hard drive via USB 2.0 and make available its contents not only to your local network, but to a web browser on any PC, iOS or Android device.



Be aware that you can stream video only in formats that are natively compatible with iOS and Android. To access content on a tablet or smartphone you will also need to download the free SharePort app and log into your myDlink account.

Note that if you connect via an external router/modem it must be configured in bridge mode for you to be able to use the cloud services.

D-Link has added in some advanced features for parents, allowing them the sort of control that before now only a dedicated proxy server could provide. You can block access to websites by URL and, conversely, block all access to the internet barring certain websites. This in effect creates a safe internet sandbox consisting of only the websites you have allowed.

You can also install the myDlink app for iOS or Android. This app allows you to see a list of websites visited by devices connected to your router in real time.

In terms of speed, we shouldn't expect blistering performance at this price. However, for a 2.4GHz router, performance was acceptable in our tests. We measured 92Mbps at 1m distance from the router, and 43Mbps at 10m.

Faster 2.4GHz routers are available but, until you jump to the 5GHz band, there's little difference in performance. It's worth noting that the 43Mbps bandwidth was enough to stream BBC iPlayer in HD, with a second computer web browsing simultaneously.

Verdict

The D-Link ticks a box other routers do not: it's a budget router that provides exceptional parental control. For families, this router makes for an excellent option. However, we'd recommend checking out the DIR-826L for an extra £15. This has all the same monitoring features, but it adds the useful 5GHz band into the mix. I John Taylor



to your preferred selection, moving some of the less interesting fare to nested pages.

Image quality gets a single thumb-up. The black level performance is average, making the Dark Knight more Dark Grey. A

20-step black/20-step white scale confirms that blacks have been crushed to make Gotham by night look as dynamic as possible. This gives images visual snap, although some luminance fizz is evident in the darkness.

Colours are vibrant, though, and pictures, particularly when sourced via Blu-ray, are pleasingly sharp. However, motion resolution isn't a strong point, even with the help of the brand's proprietary Intelligent Frame Creation (IFC) processing.

While this screen is too small for 3D effects to be truly immersive, the dimensional performance is fun. Four pairs of specs are included in the box, and it's easy to add more.

The Panasonic is compatible with the RealD 3D system used in most cinemas. When viewed square-on, stereoscopic images have depth and no obvious crosstalk. However, viewed vertically off-axis the 3D picture suffers epic break-up.

The set's 20W sound system is effective, with enough middle-range not to become a tinny annoyance.

Verdict

The TX-L37ET5 is a well-equipped Smart TV that offers good picture quality for the money. Passive 3D provides a fun diversion, but it's Panasonic's online IPTV portal and USB media reader that are the real clinchers. Z Steve May

£1,150 inc VAT

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Specification

1.7GHz Intel Core i5-3317U; Windows 7 Home Premium 64bit; 4GB DDR3 RAM; 256GB SSD; 13.3in (1366x768) gloss LCD; Intel HD Graphics 4000; 802.11a/g/n; Bluetooth 4.0; Thunderbolt: 2x USB 3.0: HDMI; HD webcam; SD card slot; headset jack; four-cell 35Wh lithiumpolymer battery, nonremovable; 97x66m trackpad; 322x226x15.5-23.5mm (15.5-18mm with bay door closed); 1.2kg



MAGICFLIP reveals high-speed ports, including Thunderbolt



LAPTOP

Acer Aspire S5

The Acer Aspire S5 is a special kind of ultraportable laptop – but not for it's shape or style (although building clones of the Apple MacBook Air is already becoming passé for Microsoft's hardware partners).

What makes the Acer Aspire
S5 Ultrabook very special is its
Thunderbolt connectivity.
The S5 is the first
Windows laptop to
feature the high-speed
I/O interface developed by Intel
and Apple. In fact, it's the first
commercially available Windows PC
of any type to sport this connector.

Thunderbolt is specified to operate with two data lanes, each up to 10Gbps; USB 3.0, by contrast, has a signalling rate of 5Gbps.

Thunderbolt is the fastest interface available to desktop computers and, until its recent re-engineering for copper wiring, it was a futuristic optical link known as Light Peak.

Acer hides that digital light under a motorised bushel around the back of the laptop.

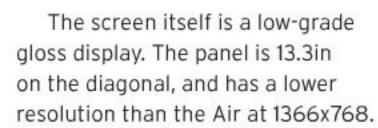
When closed, the Aspire S5 is just 18mm thick. Press a button in the top-right corner of the keyboard deck and the back end is jacked up by 6mm. A hinged section on the base whirrs open to expose a row of modern ports: HDMI, two USB 3.0 and Thunderbolt. Acer calls this mechanism MagicFlip.

The slight elevation of the rear makes typing a touch easier, too. When the laptop sleeps, it will retract itself after a few seconds - unless there's anything already plugged in there.

The slide-down port bay is another way to differentiate the Aspire S5 from every other Ultrabook, and a real party-piece to show your friends. Shame, then, that the crunching and whining noises this mechanical flap makes left us fearful it would grind to a halt at any moment.

Specs and features

Acer has clearly earmarked the Aspire S5 as its premium ultraportable. Whereas many such laptops are cheapened with plastic construction, the S5 is all metal, with an aluminium chassis finished in satin black. Only the matt screen bezel is a plastic fitting.



It's bright enough at its maximum setting, but the contrast is below average. Image quality also quickly deteriorates when viewed from the side, and visibility is entirely lost when you're observing from above or below the screen.

The trackpad is a large buttonless type. It measures 97x76mm against the Air's 105x76mm. It has a pleasant semi-smooth finish, but it's crudely let into the top plate, with visible air gaps through the chassis.

The Aspire's keyboard is the familiar Scrabble style, with flat-top black keys with white legends.

These buttons have very little travel, although we found touch-typing rapid. Our sample had a bizarre pan-European keyboard with just about every diacritical mark inscribed across its keys.

The button placement is otherwise standard, with the now-familiar inverted T for the cursor arrows, supplemented with dedicated PgUp and PgDn keys just above the horizontal arrows.

Like the Air, there are no visible speaker grilles, and sound instead leaks out through the keyboard.

The slim and sculpted bodywork means there's little space for ports and connectors on the sides, hence the extending panel at the rear. But the left side includes an SD slot and an awkward-to-find power button; it's all too easy to instead reach for the MagicFlip button, which sits in the usual power position.

The right side has a headset jack, a hard-reset pinhole, and

a pair of holes that may be for a non-Kensington locking solution.



Acer's choice of processor is a good one: the 1.7GHz Intel Core i7-3317U, first used in this year's 11in MacBook Air, is a powerful dual-core chip with Hyperthreading, boosting to 2.6GHz in Turbo mode. It consumes just 17W, and helps to propel Ultrabooks without overly noisy fan cooling.

In our real-world WorldBench 6 test, the Aspire S5 scored a very creditable 136 points. That's a terrific score for the processor/memory combination, and almost certainly helped along by the twin SSDs.

The use of Intel's integrated graphics processor is not the disappointment it once was - we saw a just-playable 28fps in Fear at Maximum detail.

In the demanding Crysis at Low detail, 1024x768, DirectX 9, the laptop averaged 54fps; and 21fps at 1280x720, Medium, DirectX 10.

MobileMark 2007 pitted the Acer's runtime at 243 minutes – just over 6 hours. This is a good result, if typical for an Ultrabook.

Verdict

We applaud Acer's addition of Thunderbolt, which expands the connection possibilities with a range of peripherals. MagicFlip, the motorised port bay, is a neat idea, but it could be smoother. The rest is standard Ultrabook-fare, down to the disappointing display and copycat specifications. Thunderbolt may bring the S5 closer in spec to the MacBook Air, but an extra £100 buys a real Air with a better screen and build. Andrew Harrison



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LAPTOP

Acer Aspire V5-571

The Acer V5-571 is a budget 15.6in laptop. Its 1.4GHz Intel Core i3 is only a second-generation Sandy Bridge processor, but it's paired with a generous 8GB of RAM.

We recorded 84 points in WorldBench 6. This is by no means impressive, but it is evidence of sufficient power for most tasks.

The V5-571's functional design looks chunky, and its aluminiumeffect plastic won't fool anyone. An advantage of this material is that the laptop is relatively light.

aired compensation in the trackpad. It's great for multitouch, although the click buttons are difficult to hit.

To means For a laptop with such a large ce of chassis, there are few connection options. There is a full-size HDMI

port, plus three USB (one is USB 3.0)
along the left edge, and an SD Card
reader at the front. At the right edge
you'll find a DVD ± RW drive.
Wi-Fi and Bluetooth connectivity

The keyboard is nicely spaced,

but shallow keys make typing for

long periods a chore. There's some

is supported, but there's no ethernet. Neither is there a VGA port. You can use the supplied adaptor should you need either of these technologies.

Acer has gone for budget over speed with a standard hard disk rather than an SSD. We'd happily trade storage space for faster

boot times, but solid-state

storage at this price is not an option. On the whole, we were pleased with the display. The native resolution of 1366x768 pixels isn't enough for full-HD, and it's coarse for a 15in panel, but the screen is adequate for viewing streaming video on Netflix and iPlayer.

In our games test, the integrated Intel HD 3000 Graphics only just cut it. The V5-571 mustered a lacklustre 16fps in Fear (Maximum settings). It's worth noting that there's a version of the V5-571 with nVidia graphics if gaming power is vital.

This is a machine that could take on some productivity on the road. MobileMark 2007 told us it could squeeze 5 hours (302 mins) from the battery before having to recharge.

Verdict

The Acer Aspire V5-571 is very much a budget choice. Its usable battery life and generous dimensions make it a workable solution for a portable machine, but you may pine for more power when it comes to more challenging computing tasks.

Karl Hodge

£450 inc VAT

Contact

acer.co.uk

Read more

■ tinyurl.com/cabax8z

Specification

1.4GHz Intel Core
i3-2367M; Windows 7
Home Premium;
8GB DDR3 RAM; 500GB
2.5in HDD; 15.6in
(1366x768) glossy display;
Intel HD Graphics 3000;
802.11b/g/n; Bluetooth;
1x USB 3.0; 2x USB 2.0;
tray-load DVD ± RW;
Realtek ALC269 HDA
Audio; HD webcam;
HDMI; 37Wh battery;
382x253x21-23mm; 2.3kg



£280 inc VAT

Contact

uk.asus.com

Read more

tinyurl.com/d5bv2ng

Specification

nVidia GeForce GTX 660
Ti; 2GB GDDR5 RAM;
967MHz core clock
(1,058MHz GPU Boost);
1,502MHz memory clock
(6,008MHz DDR effective);
400MHz Ramdac; 192bit
memory interface; 1,344
stream processors; 112
texture units; 24 ROP
units; PCI Express;
DirectX 11; 2x DVI; 1x HDMI;
1x DisplayPort; two 6-pin
PSU connectors needed;
2-year warranty



GRAPHICS CARD

Asus GeForce GTX 660 Ti

The GK104 chip used by the GTX 670, 680 and 690 finds itself at the centre of yet another new card - the nVidia GeForce GTX 660 Ti.

This is in essence a GTX 670 with one of the four memory controllers removed. The memory interface falls from 256- to 192bit, while raster operations are reduced from 32 to 24. The 2GB of RAM remains.

On paper, the 660 Ti could be mistaken for its more powerful sibling. Both the 660 Ti and GTX 670 have a core clock of 915MHz. In this case, Asus has ratcheted the clock speed to 967MHz.

The memory-clock speed hasn't been altered from its factory setting, and both this unexpanded 660 Ti and the GTX 670 share a 1,502MHz figure (6,008MHz DDR effective).

That slashed 192bit memory interface results in a painful cut to the memory bandwidth, though. This Asus musters just 144.2GBps - a mighty fall of 48.1GBps.

Both 660 Ti and GTX 670 have 112 texture units, and the standard editions of either card will have identical texture fill-rates of 102.5GTps.

With the aid
of the enhanced
core-clock speed,
the Asus 660 Ti
pushes up this fill-rate to
a very healthy 108.3GTps.

And, again like the GTX 670, the 660 Ti boasts 1344 stream processors.

The 660 Ti has more modest power requirements, slicing the thermal design power (TDP) from 170W to 150W. In practice, we found a difference of only around 7- to 9W.

As expected, the 660 Ti finishes several frames behind the GTX 670. Crucially, it just stays ahead of the Radeon 7870. These cards are roughly the same price, so the 660 Ti's newer architecture ought to make it the best buy here.

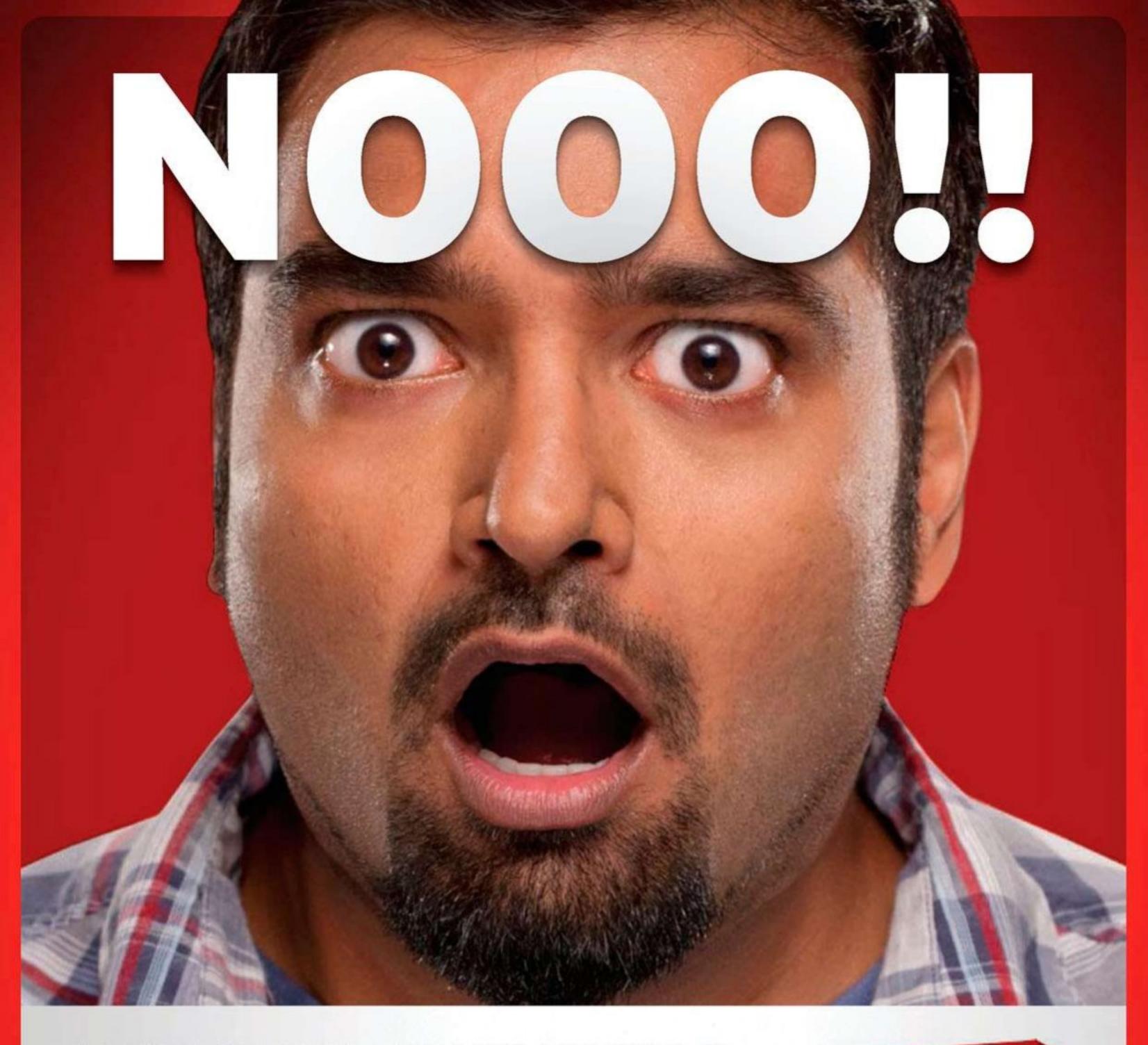
In BattleForge, we saw 62- and 41.6fps at 1680x1050 and 1900x1200 respectively, in comparison to 59.4and 41.2fps for the 7870. The GTX 670 was a good 5- to 6fps clear.

In Crysis, the difference was even smaller, with the 660 Ti's figures of 33.9- and 22.7fps comparing well against the 7870's 33.7- and 22.6fps.

Stalker: Call of Pripyat saw similar results, with the 660 Ti's figures of 72.6- and 49.9fps only just ahead of the 7870's 72.6- and 49.9fps. Framerate differences from the 670 approached double-figures.

Verdict

Asus' 660 Ti is a good performer, and gets the nod ahead of the HD 7870. We can't recommend it over the 670, though. Robin Morris



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Specification

3TB hard disk drive (also available in 1TB and 2TB capacities); 3.5in SATA 6Gbps; 64MB cache; IntelliPower rotational speed; 23/24dB acoustics (idle/seek); 147x102x26.1mm; 640g



HARD DRIVE

Western Digital Red 3TB

Western Digital has spotted a niche in the storage market. It's added to its established range of hard drives the Red, designed for NAS boxes.

Available in 1-, 2- and 3TB capacities, it's a 3.5in SATA disk that addresses the needs of home and small-business customers using NAS devices with up to five bays.

Until recently, WD offered the Caviar Blue for standard desktop PCs, Caviar Black for higher performance systems, and Caviar Green as a low-power drive for desktop and consumer NAS.

Gone now is the allusion to luxury fish spawn. These drives have been renamed to simply WD Blue, WD Black and WD Green.

The Red is a blend of the technologies found in the Green drive, and WD's enterprise disks such as the RE4.

The Red has been designed and tested for compatibility in a range of products, from vendors such as Qnap, Synology and Thecus. It's specified with 24x7 availability and PC ADVISOR RECOMMENDED

lists a mean time before failure (MTBF) of 1,000,000 hours.

WD is also offering free dedicated support and a three-year warranty.

Like the Green, the Red has a lower, undisclosed spindle speed called Intellipower. Up to five Reds are recommended in one enclosure.

The Red has 3D Active Balance Plus to reduce frame vibration and help stop disks being knocked out of a Raid when all disks are rumbling. In use, we found the Red unusually quiet and low in vibration.

We saw performance figures to rival desktop disks in ATTO, where we measured 174MBps sequential reads and 162MBps writes.

In HT Tach the Red showed an average read speed of 142MBps in both short and long tests. The write speed was surprisingly poor here, though, at just 90MBps in the long test, and 42MBps in the short test.

HD Tune Pro displayed the more familiar steadily falling graph plots when disk performance is plotted against capacity. Sequential reads



spanned 160- to 67MBps, with an average of 120MBps. Writes had a maximum of 158-, and 67MBps minimum, averaging 118MBps. The random access was 22ms read and 19ms write.

Verdict

Western Digital has pulled off a great balance of features for this specialist network-storage disk. It runs as quiet as the Green, with performance akin to a 7,200rpm desktop drive. Priced at around £140 for 3TB, it also offers good value. Mandrew Harrison

£190 inc VAT

Contact

plextor.com

Read more

tinyurl.com/c2rbbmg

Specification

256GB solid-state drive (also available in 64and 128GB capacities); 2.5in SATA 6Gbps; Marvel 88SS9174-BLD2; Plextor firmware 1.0; Micron ONFi NAND flash; MTBP = 1.5m hours; 3-year warranty; 100x69.9x9.5mm; 61g



SSD

Plextor PX-256M5S

Plextor is steadily building up its range of solid-state drives for PCs and laptops. The firm now leads with its M3 and M3 Pro models; the M5S range is based on the former, but it's sold at a lower price. Whereas the dearer M3 and M3 Pro use toggle Nand flash, the M5S has 25nm Micron ONFi chips.

The M5S, available in 64-, 128- and 256GB capacities, takes a Marvell controller to ensure consistent performance.

Plextor claims exclusive firmware running on the Marvell chip. Instant Restore allows it to rearrange data blocks, handle garbage collection and optimise unused space.

The quality-control process burns in drives for 20 hours at a high temperature to simulate real conditions. An annual failure rate of 0.5 percent is said by Plextor to be the lowest in the industry.

The Plextor SSD is housed in a lightweight metal shell, with a brushed-aluminium baseplate and wraparound top. It has a fast SATA 6Gbps interface, and a generous 512MB memory cache.

Plextor's benchmarks peg the M5S at 500MBps-plus reads and 400MBps-plus writes. We found the M5S comfortably exceeded this in the ATTO test, reaching 538- and 403MBps for reads and writes respectively.

CrystalDiskMark confirmed the SSD's near indifference to data type. We measured 502- and 402MBps for sequential reads and writes, and it maintained good speeds for small 512kB transfers, at 372- and 387MBps respectively.

In the 4kB QD32 test with multiple small-file streams, the M5S recorded decent results of 306- and 280MBps.

We measured the input/output per second (IOPS) in AS SSD. The Plextor matched the advertised 73,000, scoring 73,714 for 4kB reads with 64 threads. It's write performance was close to the 70,000 claimed, at 64,462 IOPS.

The overall nominal score shown by AS SSD was 911 points an outstanding result and the highest we've recorded in the lab.

Finally, the HD Tune Pro test resulted in a near-ruler-flat plot for both read and write tests, which is a sign of consistent performance across the drive under load. Reads here averaged 517MBps; writes were recorded around 381MBps.

Verdict

The Plextor PX-256M5S wasn't widely available at press time, but we've seen the 256GB model on sale for £190. Considering its first-class performance, it should make a compelling choice as a high-performance upgrade for any PC or laptop. M Andrew Harrison

£120 inc VAT

Contact

logitech.com

Read more

tinyurl.com/cehvgrg

Specification

Wireless keyboard and case for iPad; compatible with iPad 2 and new iPad; Bluetooth 3.0; dye-sensitive solar cells charge Ni-MH batteries; two-year battery life; 428x188x253mm; 460g



IPAD ACCESSORY

Logitech Solar Keyboard Folio for iPad

If you need to type long emails or documents on your iPad, it can become tiring using the onscreen keyboard. Logitech's Solar Keyboard Folio provides both a physical keyboard and a protective case.

The Logitech Folio has a rubber surround that holds the iPad, while an aluminium tube contains batteries that are charged by a pair of solar panels on the rear.

A sensor detects when the iPad is in the main typing position and turns on the keyboard. You'll first have to pair the keyboard with your iPad by enabling Bluetooth and tapping the keyboard in the list; thereafter, the connection will occur automatically.

The keyboard has 65 plastic keys. Their 1.5mm travel is just enough to give positive feedback, allowing you to type surprisingly quickly.

The Folio's layout is close to a desktop keyboard, and improves on the onscreen version with a dedicated number row and punctuation buttons. Logitech has even managed to squeeze in a double-height Enter key.

We typed this review on the keyboard, and found ourselves missing only the Home and End keys. You can tap on the iPad's screen

to quickly move around the cursor in a writing app such as Pages.

The top row of keys includes a 'Home' button, mirroring the iPad's own Home button, and every other key on the row works as a shortcut to either an app or a function, such as search, zoom and others.

When you put the iPad in the alternative stand position, the outermost row of keys allow you to adjust the volume, as well as fastforward and rewind media.

The main typing angle is fine if you're using the Folio on a desk, but it becomes less ideal on your lap the iPad sits very awkwardly upright.

There are other niggles, too. There's nothing to hold the case

shut and, although it's well made, no premium materials have been used. Neither the iPad surround nor the keyboard are removable, so you're stuck with the bulk and weight. An iPad 2 in the Logitech Folio case weighs just over 1kg.

Verdict

On a desk the Folio makes for a great keyboard, but it's not so comfortable to use on your lap. The case provides all-round protection and is well made, but it has no clips to hold it closed and it doesn't feel as expensive as it costs. The solar power is convenient, but the Folio doesn't offer great value. X Jim Martin

Philips Blade 2 249C4QHSB



Features:

- 24" AMVA LED for wide-view, Super high contrast viewing
- HDMI-ready for Full HD entertainment
- SmartContrast 20,000,000:1 for incredible rich black details
- VGA and 2 x HDMI input connectivity
- Superb glossy polish with distinctive features

Philips Lightframe 2 248X3LFHSB



Features:

- 24" W-LED-backlit panel
- Full HD LCD display with a 1920x1080p resolution
- SmartResponse 2ms
- SmartContrast 20,000,000:1 for incredible rich black details
- VGA and 2 x HDMI input connectivity

Philips V-LINE 226V3LSB



Features:

- 22" LED-backlit panel
- Full HD LCD display with a 1920x1080p resolution
- Fast 5ms response time
- SmartContrast 10,000,000:1 for incredible rich black details
- DVI-D and VGA input connectivity

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Compiled by Chris Martin

TUITION APP

Coach's Eye

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tinyurl.com/c8dbgkL

System requirements

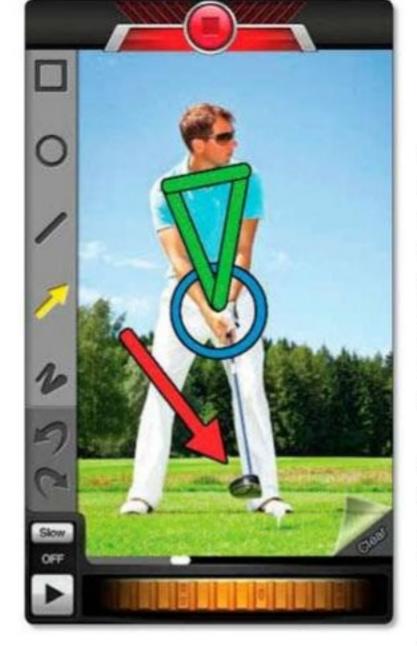
iOS 5.0/Android 2.3.3 or later; 12MB storage (iOS), 18MB storage (Android)

Coach's Eye lets you film your sporting performance using your phone or tablet, then watch it back in super-slow motion on a large screen. Useful annotations can help you understand why you hook your 3-wood or keep hitting the net with your forehand.

Technology is making available to everyone facilities that were previously restricted by expense to professionals. No longer do you need a video suite to record your tennis serve or golf swing.

Coach's Eye builds on that capability: it's a simple-to-use app for any smartphone or tablet. By recording and reviewing, you can break down an action you repeatedly perform in the hope of improving your technique.

Coach's Eye mainly involves using your device's camera to record clips of sporting performance. Then, where possible, you can watch the footage on a larger screen. A couple of killer features make it worth using over your built-in video recorder.



The first is Slow-motion review. Using a flywheel you can scroll through video at a snail's pace, nudging forward and backward in tiny increments of time to precisely evaluate where your practised golf stroke became a manic hacking slice. And to help you pick out the spot where things started going wrong, you can annotate film footage.

So many repeated sporting actions require stability that simply being able to draw a straight line from head to toe can point out flaws in technique. You can annotate video with more than lines, however. Arrows, circles, squares and freehand drawing allow you to measure how far from ideal your strokes and swings are.

If you're the coach in this scenario, you can even record audio over the top of the footage. In my experience this goes something like this: 'Keep your head still, Matt. KEEP YOUR HEAD STILL, MATT'. Your experience may differ. Either way, Coach's Eye offers the useful capability.

Verdict

Coach's Eye is a simple-to-use tool that just might help you improve your sporting prowess. For £2.99 it's a must-have for those with the potential to go places, and those for whom all the gear is as important as having any idea. 🗵 Matt Egan



ENTERTAINMENT APP

TVCatchup

Free

Contact

tvcatchup.com

Read more

tinyurl.com/c7yhhLq

System requirements

Android 2.2 or later (also available for iOS and online); 1.4MB storage

TVCatchup is a free online streaming service that brings live free-to-air TV content from more than 50 channels to any web-connected device.

You'll need a TV licence to watch programmes on your tablet or smartphone, and it's advisable to connect via Wi-Fi, too. If you are using 3G, watch you don't go over your data allowance and incur a hefty charge on your bill.

iPhone and iPad users have had access to a dedicated TVCatchup app for years now, whereas Android fans have had to use the full desktop version of the site. That's fine for tablets, but the interface can be much more difficult to navigate on the smaller screen of a smartphone, and there are only so many pauses for buffering you can take before you lose track of what's going on.

There are advantages to using the full desktop site, such as the seven-day programme guide, forums, adjustable video resolution and aspect ratio and an onscreen volume slider. But the app is far



more smartphone-friendly, with static rather than video ads that can be immediately closed and a scrollable list that shows what's on now and next on each available channel. A lower playback resolution offers an inferior image, but fewer buffering breaks.

You can still switch the aspect ratio by tapping the screen during playback, but you'll need to exit a channel to view the TV Guide. The lack of a seven-day forecast is of little importance, since you're likely to view content on the move via TVCatchup only when a particular programme is screening that you just can't bear to miss.

An advantage of the app is that you bypass login. There's no need to panic if 'EastEnders' is starting and you can't remember your password fire up the app, pick a channel, close the ad and you're done.

We'd like to see an option to improve the picture quality over Wi-Fi, and a brief synopsis of current programmes wouldn't go amiss.

Verdict

We already use this excellent free service to get our telly fix on the move, but the mobile app makes doing so far more convenient and user-friendly on smaller screens.

Marie Brewis





GAME

Granny Smith

69p inc VAT (iOS) 83p inc VAT (Android)

Contact

- grannysmithgame.com Read more
- tinyurl.com/d6qyhy5

System requirements

Android 2.3 or later/ iOS 4.0 or later; 20MB storage (Android), 25MB storage (iOS)



Granny Smith is a physics-driven racing game from Mediocre, whose 36 hand-crafted levels are anything but. The game offers fantastic visuals and spectacular stunts across three worlds. Smash windows, burst through fences, tear up gardens, dash through shopping centres, and use your cane to swing from pillar to post as you race to beat the thief to your green apples.

Granny Smith is no ordinary granny: she can rollerskate, somersault through the air, drop 30ft to the ground... and get back up. You can equip her with a helmet, banana peels and baseballs to help her outwit the apple thief and blast through obstructions. Two faster characters can also be unlocked.

There are just two controls, grab and jump, which fall naturally under your left and right thumbs. We really wanted an accelerate button, too.

Timing is key to avoid landing in a crumpled mess and losing the money you've picked up throughout a level. You're also awarded points



for landing granny firmly on two feet following a jump.

The coins scattered across each level let you buy booby traps, unlock characters and skip the more challenging levels; they also help to point out the correct path.

The aim is to collect the three apples in each level, although progression through the game is not dependent on this or the number of points scored. The greater challenge is in crossing the finishing line.

The learning curve is steep, and the game can feel repetitive, but

it has charm by the bucketload. At the end of each level you can watch a retro-style replay, which truly captures the look of desperation in granny's eyes as she seeks out her apples... and pain, as she faceplants time after time.

Verdict

It really doesn't matter that Granny Smith is difficult, repetitive, has a meaningless scoring system and offers only 36 levels; this game is both gorgeous and charming. Well worth the download. Marie Brewis

GAME

Hidden Object

Free

Contact

- magmamobile.com
- Read more
- tinyurl.com/buu6879

System requirements Android 1.5 or later;

18MB storage

be any simpler. You're given a list of objects that you must seek out within a cluttered area, and you simply touch them onscreen as you find them. It sounds easy, but the game quickly becomes tricky.

Hidden Object for Android couldn't

Hidden Object could be described as a fusion of Where's Wally? and 'Countdown'. But rather than searching for a tall, bespectacled gentleman, who has a passion for wool, stripes and canes, you're on the hunt for all sorts of tat and junk.

The game can be played in seven different scenarios, with an extra bonus setting. You start off in Archeology, then progress through Space, Room, Laboratory, Marina, Casino and Circus. We'd like to see a few more levels, but the items you must find change each time, which help to keeps the game enjoyable.

The hidden objects range from sea horses to toy robots, handbags, lightbulbs, cars and everything in between. You have a set amount of time to find the objects; the quicker



you find them, the more stars you're awarded (out of a maximum of three) for your performance.

As an incentive to quickly find the items on your list, whether you can unlock the next level in the game is dependent on the number of stars you collect. You can collect extra stars by completing each level in its Easy, Medium and Hard difficulty modes, too.

The game quickly increases in difficulty as you progress through the levels, with the hidden objects becoming more and more difficult to find - some are entirely obscured by other objects.

Hidden Object is free to play, with no available in-game purchases. Magma Mobile instead makes its cash through unintrusive banner ads.

A down side of the app is its ability to trigger notifications on your Android device. If you can put up with this behaviour, it's an excellent timewaster.

Verdict

Hidden Object is easy to play, but not so simple to master. It kept us entertained for hours, and kids will love it. Magma Mobile takes a few liberties with its notifications, though. I David Court



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OPERATING SYSTEM

Apple iOS 6.0

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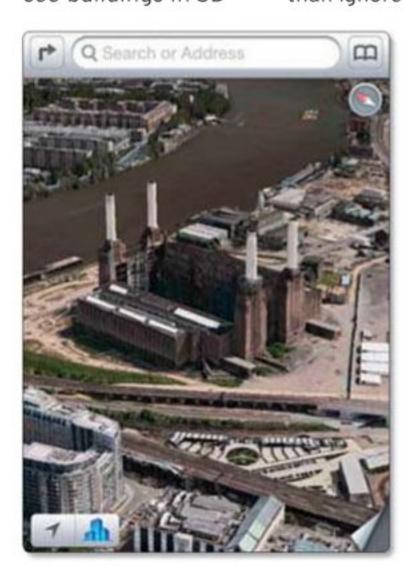
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System requirements

iPhone 3GS/4/4S/iPad 2/ iPad (2012)/iPod touch fourth-generation

Usability:★★★★★ Features: ***

FLYOVER is an attractive way to see buildings in 3D



This autumn sees the launch of the sixth-generation iOS platform, which headlines on the iPhone 5, but is suitable for most iDevices made in the past three years.

Apple says 200 new, mostly minor features have been folded in. Some are immediately obvious Passbook is added to the Home screen, along with a retouched icon to signify the new Maps app.

When the non-location-aware Siri first appeared last year, it was of limited use to UK users. iOS 6.0 adds this functionality, allowing you to use Siri to find local businesses, restaurants and the like.

It can be all too fallible, though. We asked Siri to find the nearest post office; it responded with several map pins, completely overlooking the main branch close to our office. It's unclear whether the mistake is Siri's, or flaky mapping data.

Photo Stream was introduced with iCloud for accessing your photos on any iOS device. With iOS 6.0, you can now share new photo streams with others.

Passbooks isn't yet especially relevant in the UK. Launching the app gives you an idea of what may come: boarding passes for airlines, tickets for films and events, credit cards for specific shops and discount coupons.

Social media fans may welcome the extra integration with Facebook, allowing you to post updates from the Notification Center and Siri.

As seen in Android Ice Cream Sandwich, Apple now lets you deflect inopportune calls; rather than ignore the call, a push-up menu

> lets you reject it with a preset text message.

With so much personal information stored on smartphones these days, more fine-grained control over who gets to see what was overdue. You can now restrict how your data is siphoned by other companies. We'd rather have a simple off option to keep all data personal but, until then you can elect to, for example, not share your contacts





iOS 6.0 lets you reject calls with a text, and Siri is now location-aware

with Google Earth; likewise, your photos, calendars and reminders can be walled off from apps.

Buried in the Settings menu is an option to 'Limit Ad Tracking' - that's limit, not stop. We still need a 'Keep all my affairs private' option, but it's a step in the right direction.

Safari for iOS has received a few updates, including iCloud tabs. This usefully lets you jump to pages you currently have open on other iOS devices (or Mountain Lion Macs).

In the Mail app you can now paste photo or video inline without having leave the app. And, in common with Android, you can refresh your inbox by pulling down the screen.

Panorama mode has been added to the Camera app, which stitches together a series of portrait shots into one widescreen photo.

Maps app

Apple has created its own Maps system in place of Google Maps, using mapping data from third parties such as TomTom. It's built on vector-based graphics and text, and scales wonderfully. It's an elegant solution to the problem of having your device continually redownload bitmapped images at different resolutions each time you zoom in.

With smaller downloads required, larger areas can be retrieved, and the data seems to be retained longer on the device.

Popular features such as Street View aren't available. More worrying is the misplacing of landscape features, towns and cities, and the absence of crucial details such as railway stations. Satellite imagery is also of a comparatively poor quality.

The Flyover feature is an attractive way to see buildings in 3D, but available only in select larger cities, and not on older devices such as the iPhone 4.

Maps is still a work in progress, but that doesn't help users who have already upgraded. And apps such as Find My Friends are reliant on Apple's sparse beta. You can still view Google, Bing or Nokia's mapping data in Safari, of course.

Performance

Some previous iOS updates have resulted in older hardware struggling. We tested performance before and after on both the iPhone 4 and 4S. The results were encouraging.

In the SunSpider JavaScript test, an iPhone 4 moved from 3,519ms to 3,003ms, suggesting a 17 percent improvement in rendering speed. The 4S recorded 1,891ms, up from 2,421ms - a 28 percent improvement.

Geekbench 2 showed no significant change in the raw processor and memory speed: our iPhone 4 still averaged 326 points, and the iPhone 4S 632 points.

GLBenchmark showed very similar graphics performance. The iPhone 4 played the Egypt HD sequence at 4.1fps in iOS 5.1, and 4fps in iOS 6.0; the 4S managed 18- and 19fps respectively.

Verdict

Lots of added handy features make iOS 6.0 a good upgrade - with the caveat of the underperforming Maps. In every other respect, iOS 6.0 is a compelling free upgrade for iPhone and iPad users.

Andrew Harrison

INTERNET SECURITY

Kaspersky Internet Security 2013



System requirements

1GHz processor; Windows XP/Vista/7/8; 1GB RAM; 480MB drive space



Internet Security 2013 is the latest incarnation of Kaspersky's mid-level security product, sitting between the basic Anti-Virus and the more comprehensive Kaspersky One.

Kaspersky's feature set is strong, with anti-virus, anti-spam and anti-phishing modules, plus parental control, a firewall, Safe Money and keylogger protection.

Safe Money substitutes a secure browser when you're working with your online accounts, while the virtual keyboard encrypts key presses so they can't be recorded.

The interface is well designed, with a main pane showing the status of your PC, plus nine shortcuts to the individual aspects of the program. These include Reports, where you can access event statistics for the past day, week, month or year, and Settings, which offers very detailed control.

When installed under Vista, Windows 7 or 8, a Kaspersky Gadget gives quick access to scans and reports. This can also be used as a quick-scan facility - you simply drag-and-drop files on to the icon.

We ran Free Keylogger and checked it was copying our keystrokes. We then turned on the Secure Keyboard Input and logged into an online banking site. No new information appeared in the keylogger's text file.



KASPERSKY INTERNET SECURITY is nowmuch lighter on system resources

The program took 1 hour 10 mins to scan our 50GB basket of test files. Kaspersky reportedly examined 349,849 files, giving a scan rate of 583 files per second.

This is fast, although the number of scanned files is also higher than it is with many other programs. A second scan of the same file set took just 5 minutes, but it checked only 19,070 files, suggesting that fingerprinting technology is in use to reduce the system load.

Our 1GB file-copy test increased from 41 secs to 53 secs with a scan running in the background. This is an increase of 29 percent, which is low in comparison with most of the internet security suite competition.

AV-Test has yet to evaluate Kaspersky Internet Security 2013, so we can't comment on how well the program catches or removes Windows viruses.

However, the 2012 product scored 16.5 out of a possible 18 points in June 2012, and was beaten only by Bitdefender. It got a perfect score for the repair of damaged files, and lost just half a point in the Protection category, which deals with the handling of new unknown threats. Kaspersky relies on a cloud information network, where new signatures are quickly shared.

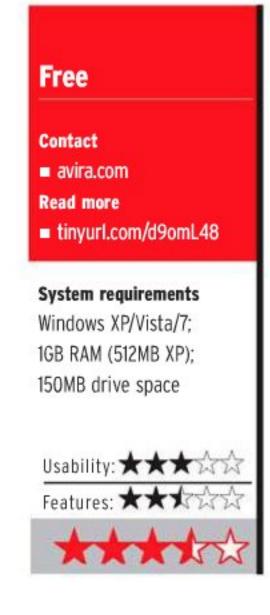
It lost a point in the Usability category, having slowed AV-Test's test PC more than rival products. In our experience, this is no longer a problem in the 2013 version.

Verdict

Kaspersky Internet Security 2013 has a full complement of protection modules at its disposal, plus some useful extras. It is a little expensive when compared to other products, though. Simon Williams

ANTIVIRUS

Avira Free Antivirus 2012



Free Antivirus 2012 is a cut-down version of Avira's commercial security product. It includes plenty of suggestions that you should upgrade to the paid-for version.

The main control panel is functional enough, but with few frills. It consists of a main adjustment pane, with a menu of options down the lefthand side. Some options are greyed out and available only in the full version, but you do get a System Scanner, Realtime Protection, Web Protection and all the admin options.

The System Scanner offers a number of preset scans, as well the option to target individual drives or folders. Presets include local drives, the Windows system directory and My Documents.

Realtime Protection lists the last malware file detected, while Web Protection does the same for contaminated webpages.

Under the Administration section you can check what files have been quarantined, look at listed events and scan reports, and set a schedule for automated scans.

The Configuration button brings up individual settings for various aspects of the application, such as picking threat categories.

Using this, Avira appears to be able to protect you from jokes and games, among other things. No more Tetris Battle, then.

A scan of our 50GB basket of test files took just over 54 mins, and Avira Free Antivirus claimed to have examined 413,992 files. This puts the file-scan rate at a very healthy 127 files per second.

A second scan took just as long as the first, suggesting that Avira doesn't use clever fingerprinting to mark as safe already scanned files.

Despite its insistence on scanning every file every time, Avira Free Antivirus had a very low impact on system performance. The time required to copy a 1GB file increased by just 23 percent when a scan was running in the background - only Panda Global Security performed better in this regard.



INTERNET SECURITY

Panda Global Protection 2013



System requirements

300MHz processor;

Windows XP/Vista/7/8: 1GB RAM: 275MB drive space

Usability: *** Features: *** *** Value:

Global Protection 2013 is Panda's top-of-the-range Internet Security product, with all the bells, whistles, vuvuzelas and ti'ko drums.

Panda Security has jazzed up the interface, with a nod to Windows 8's Modern UI. On the main panel are large, squarish icons for the primary components of the suite. There's also a small status panel at the top, which shows the number of scanned files and the total number of infections detected.

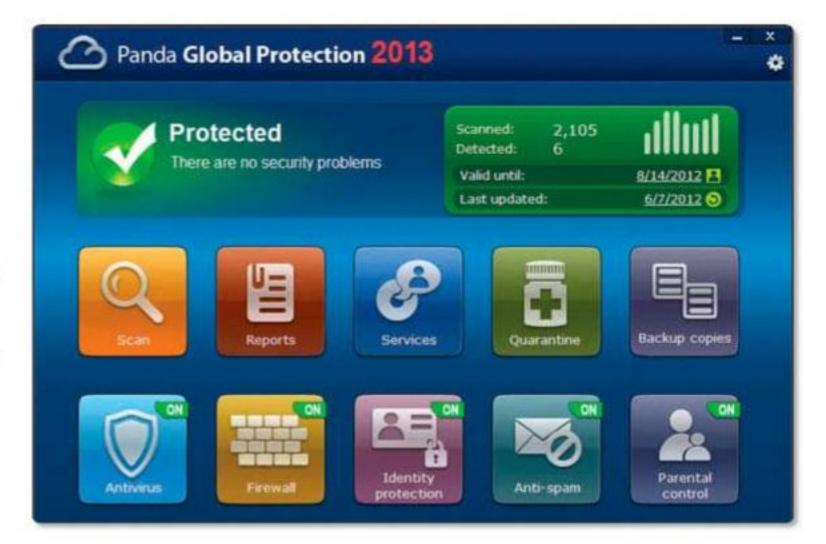
At the bottom is a row of icons that cover social-media protection and security tools, such as network analysis and a virtual keyboard.

The suite includes scanning, antivirus and a firewall, plus extras such as file encryption, PC optimisation, parental control and personal data protection.

Each of these tools has its own setup and reporting screen, and these are clearly laid out and generally easy to navigate.

Global Protection 2013 has a new Scan Manager which, Panda claims, works only when necessary and can result in 70 percent faster scans.

We twice scanned our usual 50GB basket of test files. The first time the program took just under 40 mins to scan 456,329 files. This equates to 191 files per second, which puts Global Protection among the fastest suites we've seen.



PANDA has opted for a Windows 8 Modern UI-style design for its 2013 suite

On our second scan, Panda required 23 mins 42 secs to examine 273,770 files. This is roughly half the files and half the time, so the intelligence seems to be working.

Our final test, which involved copying a IGB file with and without a scan running in the background, saw a 16 percent decrease in performance. This is one of the best results we've seen.

AV-Test hasn't finished evaluating Panda's 2013 antivirus engine, although the 2012 version of the product scored only 13 out of a possible 18 points. It was beaten even by the free Microsoft Security Essentials 4.0.

Breaking down AV-Test's results, Panda scored five points in the

Protection category, four in Repair and four in Usability.

Version 2012 was able to detect 100 percent of recent and older malware, but fell down when it came to spotting zero-day threats, despite Panda pioneering the sharing of threat details through the cloud.

Verdict

Panda Global Protection 2013 is a reasonably comprehensive protection tool for one or more PCs in a home or small-business environment. It's also light on resources. The previous version of Panda's antivirus engine wasn't a top player, and the protection efficacy of Panda's 2013 offering is as yet unknown. Simon Williams



AVIRA is a good free antivirus program, but comes with few frills

AV-Test awarded Avira Free Antivirus 2012 12.5 points out of a possible 18, which is enough to certify it, but not to put it among the best-performing products.

Avira received 4.5 points in the Protection category, four in Repair and four in Usability. Like the free Microsoft Security Essentials, it fell down on detecting zero-day malware. Avira also scored just 80 percent in the first of two months of testing, which pulled down its average.

Avira proved effective in the detection and complete removal of more widespread infections, but it failed to repair all malicious system changes. It still scored 80 percent in this test, though, against an average of 63 percent.

In the Usability category it was rated better than average in terms of its impact on system resources, which is in line with our own tests. It gave no false positives, but AV-Test

noted that it blocked seven times as many installations and legitimate software actions as the average.

You should bear this in mind if Avira Free Antivirus begins throwing up surprising objections to newly installed software.

Verdict

Avira Free Antivirus 2012 is a respectable free antivirus program, which mostly does what it claims, but doesn't offer much in the way of extras. The scan presets are useful, and it's generally light on system resources, but AV-Test scored AVG Free conspicuously higher. We'd go along with that conclusion. M Simon Williams

PHOTO MANAGER

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phaseone.com

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System requirements

Intel Pentium 4 processor or better; Windows XP/Vista/7/Mac OS X 10.5.8 or later; 2GB RAM; 10GB drive space; Microsoft .Net Framework 4.0



Media Pro is a cross-platform photo-management and -workflow program for Windows and OS X.

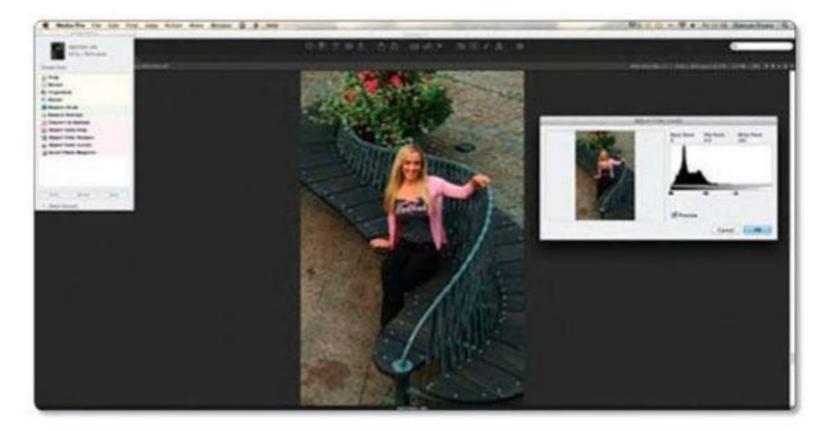
Photos can be imported into a catalogue from an iPhoto library or any folder you specify. They can then be awarded a star rating and colour tag to aid searching.

Images are viewed as resizable thumbnails; you can see a file list if required. Comprehensive search and sorting filters include keywords, events, dates, author, file properties and locations. You can also create notes about each image and batch-process several files at once.

Specific images can be displayed at full-size or on the light table; the latter has a plethora of shortcuts to display the histogram, let you zoom in and add tags.

A second image can be added to the light table, enabling you to compare files. That you must press keys rather than click icons makes for a crude user experience, though.

This is compounded when using the Image Editor. Rather



MEDIA PRO is a faster, slimmed-down alternative to Aperture and Lightroom

than offering the detailed and sophisticated options of rival packages, Media Pro has a pop-up menu with tools to crop, resize, transform, rotate and invert images, remove grain and red-eye, convert to duotone, and adjust the saturation, colour balance and colour levels.

Clicking on one of these opens
the image at full-size and brings
up the adjustment dialog box. We'd
prefer to have the image open first,
allowing you to check what needed
to be done before selecting the
required tool.

The Color Levels tool is actually a standard levels adjustment, and the program is missing Curves, Layers and Mask functions.

There are good annotation facilities and a range of export options, from PDF to HTML.

Verdict

As a fast and simpler alternative to Aperture and Lightroom, there would be some merit to Media Pro, but both rivals are cheaper and offer considerably better functionality.

□ Duncan Evans

DATA ENCRYPTOR

Folder Lock 7.1

£25 inc VAT

Contact

folderlock.org

Read more

tinyurl.com/bouu6ze

System requirements Windows XP/Vista/7

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

Folder Lock is a one-stop-shop for file encryption and data security.

Not only does it encrypt and hide volumes and folders with an on-the-fly 256bit algorithm, it also protects USB drives and creates wallets to list and store important information, such as bank accounts and online passwords.

The program goes further with a secure erase (shred) function, data lockers, and the ability to run in stealth mode, without any sign that it's operating.

Version 7.0 added an optional online component, letting you sync your data lockers to developer NewSoftwares' own storage service. The service costs a few pounds per month for 10GB - it's not the cheapest, but it's relatively competitive. This should be ample for storing only your secure data.

Other features in Folder Lock include login-attempt tracking, and the ability to create both normal and self-extracting password-protected zip files.



FOLDER LOCK is a comprehensive file-encryption and data security program

The program couldn't be any easier to use. Folder Lock keeps two services running, but this doesn't appear to impact performance. The program is password-driven, so there are no certificates to lose (as with Bitlocker). There's a master password for the program, which you'll need for administration purposes and uninstallation.

Version 7.1 improves the interface's design and usability. We still think it could use a more business-like look, however.

That said, the portable interface suffers less in this regard. You can open lockers from USB drives on any Windows computer using the portable version, which requires no installation.

While the lockers are perfectly secure, be aware that the hidden files and folders are hidden only while Folder Lock is running. You may access them freely by simply booting from CD, such as Ubuntu Live or Parted Magic.

Verdict

Folder Lock 7.1 is a comprehensive program for file encryption and data security. It's affordably priced and fulfils most security needs.



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Specification

2GHz Intel Core-i7-3667U (dual-core, 3.2GHz Turbo); Windows 7 Professional 64bit: 8GB DDR3 1,600MHz RAM; 128GB SSD; 13.3in (1366x768) matt LCD; Intel HD 4000 graphics; 802.11a/b/g/n; gigabit ethernet; Bluetooth 4.0; 1x USB 3.0; 2x USB 2.0; VGA; HDMI; 1.3Mp webcam; stereo speakers; Kensington lock slot; SDXC card slot; 85x49mm trackpad, two-button, multitouch; fingerprint scanner; 45W adaptor; 46Wh lithium-ion, non-removable battery; 315x226x15.5-16.9mm; 1.1kg



LAPTOP

Toshiba Portégé Z930-108

The Z930 uses the same chassis as its Z830 predecessor, Toshiba's original Ultrabook. Like that laptop, it's nothing special to look at, with a very square and dated design.

But this 13in laptop is extremely thin and light. It's lighter than Apple's 13in MacBook Air, at just over 1kg versus 1.35kg. We hardly felt its presence in a bag.

Our measurements revealed a chassis that ranges from 15.5mm at the front to 16.9mm at the back, making it somewhat chunkier than the 8.3mm that Toshiba claims.

The glossy black Scrabble-tilestyle keys on the backlit keyboard make typing fast and easy, but they don't offer much travel. And the small trackpad is responsive, although it can get in the way during typing. A button below the keyboard lets you disable it.

The security-conscious might welcome the fingerprint scanner found between the click buttons.

One down side is the Portégé's hefty £1,232 (plus VAT) price. Rest assured, your money will be going toward a well-made product. The magnesium-alloy chassis is strong, but also very light. The screen, though, is thin and rather bendy.

The ultimate business laptop demands good application

performance. Toshiba has fitted the Z930-108 with a third-gen (Ivy Bridge) Intel Core i7 processor. Its Core i7-3667U chip is the speedier of Intel's two low-power 17W chips. It's clocked at 2GHz, rising to 3.2GHz

with Turbo Boost.

Aiding performance is 8GB of fast 1,600MHz system RAM and a 128GB SSD preinstalled with Windows 7 Professional 64bit. We'd like to see more storage space at this price, however.

The Z930-108 scored a very good 153 points in our WorldBench 6 test, outperforming business rival Acer's TravelMate P6 by eight points.

This laptop wasn't designed for gaming, but we found Intel's HD Graphics 4000 could run our Fear test at a playable 29fps.

Many Ultrabooks fall short of the 13in MacBook Air's detailed 1440x900 resolution. Toshiba's Z930-108 is no exception, with a lower - but still usable - 1366x768 pixels. The Toshiba stands out with its non-reflective matt finish. Brightness is also good, but the viewing angles are disappointing.

Toshiba has managed to squeeze in full-size VGA, HDMI and ethernet ports, so there's no need to carry around adaptors. Other ports include one USB 3.0, two USB 2.0 and an SDXC card reader.

Toshiba claims the Z930-108's fixed 46Wh lithium-ion cell can endure 8 hours away from the mains. We recorded 14 minutes beyond that time (494 minutes in MobileMark 2007). This is a usable runtime, if short of the TravelMate P6's 12 hours-plus. That laptop isn't nearly as portable as the Toshiba, though, weighing nearly double its tiny 1.1kg.

Verdict

Toshiba's Portégé Z930-108 could make a good choice as a business ultraportable. It's extremely light, with fast performance, and it has good build quality and an abundance of features. But given that the Acer TravelMate P6 offers twice the battery life, the Z930-108 isn't the ultimate business laptop Toshiba claims it is.

Chris Martin

SECURE USB DRIVE

iStorage diskAshur 500GB

£132 ex VAT £159 inc VAT

Contact

■ istorage-uk.com

Read more

tinyurl.com/cx3dnhy

Specification

Encrypted portable hard drive; 256bit AES-XTS encryption; USB 3.0; soft case; 120x85x19.5mm; 181g



The iStorage diskAshur is the world's most secure, compact and affordable USB 3.0 portable hard drive, according to UK distributor iStorage. It's available with AES-XTS 128- or 256bit hardware encryption.

All data copied to the hard disk inside is encrypted and can be unlocked only after entering a six- to 16-digit PIN. The diskAshur is available in capacities ranging from 250GB to 1TB.

We tested the 500GB model with AES-XTS 256, which sells for £132 (plus VAT). Prices start at £99 (plus VAT) for 250GB with 128bit encryption, and £182 (plus VAT) for the 1TB model with 256bit AES-XTS encryption.

The iStorage DiskAshur is a light, robust, yet slightly bulky black device that's almost 20mm thick, with a smooth non-slip surface and bevelled edges. It's billed as shock-resistant, thanks to a 16-point mounting system.

A USB 3.0 port allows super-fast data transfers, meaning you can access your files faster than ever.

The large telephone-style keypad has clear numbers that are easily distinguished on oval-shaped wear-resistant buttons. Letters below each number can help you create codes based on memorable phrases.

iStorage includes simple setup instructions for the hard drive, which enables a first-time user to quickly change the default PIN and start using the device.

You begin by entering the admin code and pressing the Unlock key. A red LED switches to green, informing you that the diskAshur is ready for business.

To set your own PIN, enter the admin PIN and press Unlock, 9 in unison. The LED is now blue, signifying you're in admin mode. Enter and then re-enter a six- to 16-digit PIN; if it's been successfully changed the LED will be solid green for three seconds, then solid blue.

The device can also be assigned a self-destruct password that will reset all encryption and delete all data should the drive get into the wrong



£147 ex VAT £177 inc VAT

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Specification

Windows-only gigabit ethernet port; 3x USB 2.0; 3x VLAN support; SSL 3.0, TLS1.0, HTTPS encryption; 802.1x/EAP-FAST/ EAP-TTLS/PEAP authentication; user access control; certificate management; SNMPv3; 2.7W power consumption; 5-year warranty; 138x100x30mm

disk shur

USB DEVICE NETWORK SERVER

SEH Computerteknik myUTN-150

USB is one of the most popular technology standards ever invented, and ubiquitous on so many gadgets and devices. But, in some circumstances, the need to have a computer available to communicate with a USB peripheral can be a major limitation. If you wish to share a USB device such as a hard disk or printer between PCs, that computer has to be constantly turned on and configured for sharing.

The myUTN-150 works around this problem. It's an unobtrusive blue box with three powered USB 2.0 ports that connects to a network over ethernet.

Configuration is possible though a built-in web page, with options to adjust the network settings and control access to the devices, along with a proprietary UTN Manager. This works only with Windows PCs.

Devices connected to the myUTN-150 don't appear on the network as a shared drive. The UTN Manager software acts as a passthrough, virtualising the USB interface, so a device behaves almost exactly as it would if it were physically connected to a local port.

With the software running at startup, and a device set to auto activate, USB devices are ready to go as soon as Windows loads. Booting from a shared device isn't possible, but we were able to use all our shared devices as if they were connected directly to the PC. An iPhone showed up in iTunes, a USB

keyboard worked flawlessly, and all storage devices were assigned a drive letter as normal. By default, the myUTN software

By default, the myUTN software gives notifications when devices are connected, and states how long they have been idle. This becomes irritating, but it can be disabled.

For everyday USB peripherals, such as external storage and printers, the myUTN-150 is a solution to a problem that's already been solved. There are many other less expensive ways to share USB storage devices on a network, independently of a single computer.

Routers now come with built-in USB ports, plenty of NAS devices are available, and printers can be used wirelessly. The myUTN-150 also supports only USB 2.0, so its transfer rates are limited.

This is undoubtedly a niche product, but some system admins could make great use of the myUTN-150. It comes into its own

when sharing more specialised USB equipment over a network.

A USB microscope, for example, could be viewed and controlled from a PC in the same room or a lab on the other side of the world.

Devices can be shared over the internet and controlled via VLANs, and there are some security options – although, arguably, these could be better presented. SSL is supported, and access to devices can be restricted on a per-port basis.

Verdict

-150

USB Deviceserver

The myUTN-150 will be useful to certain users, although it has some limitations. There's no support for Linux and OS X, and USB 3.0 connectivity would have been preferable. But the virtual USB interface is fully functional, and the myUTN-150 was reliable in our tests; it could be ideal for an organisation that constantly has to juggle access to a computer that's connected to a critical USB peripheral.

Orestis Bastounis

hands. An auto-lock feature locks the device after a preset amount of time.

Additionally, a Brute
Force Destruct Feature
helps deny access to
hackers. It's reinforced
by what Apricorn - the
device's US-based
designer - calls VTC
Technology. Details
of this are scant, but

it claims to 'thwart timing attacks aimed at accessing the drive by studying the behaviour and infiltrating the electronics'.

We lab-tested the diskAshur, née diskGenie, in its latest USB 3.0 form to see how fast data can be written to and read from the drive. The headline speed for the disk is around 70MB per second (MBps). Like most disk-based storage, read and write speeds are in essence the same.

In the ATTO benchmark test, the top sequential speed with files from 8kB up to 8MB in size was around 72MBps. HD Tach showed a top speed of around 75MBps, falling to around 35MBps and averaging 58MBps. HD Tune Pro told a similar story, with max and mins at 71- and 34MBps respectively, and the drive averaging 55MBps.

We also tried the drive with QuickBench in Mac OS X. The results were broadly similar with cache effects enabled, with read speeds at around 70MBps and write speeds closer to 65MBps.

These speeds are all around twice the ceiling of USB 2.0, but well short of the capabilities of USB 3.0, where we might see 100MBps from a 2.5in laptop drive.

iStorage now sells a portable drive with faster SSD storage although, ironically, it's treacled by an old USB 2.0 interface.

Verdict

The iStorage diskAshur's USB 3.0 interface affords transfer speeds around twice that of its USB 2.0 predecessor, but the slow internal disk creates a bottleneck.

Alicia Jones & Andrew Harrison

£220 ex VAT £265 inc VAT

Contact

- hp.com/uk
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- tinyurl.com/ceqep73

Specification

Mono laser printer; 256MB memory; 1200x1200dpi print resolution; quoted/actual print speed: 35/26.1ppm; USB 2.0; gigabit ethernet; 802.11b/g/n; Mobile connectivity; 250-sheet input tray + 50 sheets; 84 TrueType fonts; PCL5e/ PCL6/PS 3 emulation; toner cost: £120; print life (pages): 6,900; 365x368x271mm; 11kg



£385 ex VAT

£462 inc VAT

brother.co.uk

■ tinyurl.com/cpjwsf2

Read more

Specification

Mono laser printer;

1200x1200 print

duplex printing;

128MB standard memory;

resolution; quoted print

speed: 36ppm; auto

250-sheet standard

input capacity; 330-sheet

maximum input capacity;

10/100 ethernet; USB 2.0;

405x415x423mm; 16kg

Contact

PRINTER

HP LaserJet Pro 400 M401dw

The LaserJet Pro 400's black casing makes it look more like a home printer than a business model, which is an impression reinforced by the 3.5in touchscreen.

The latter sits on a long stalk and hovers over the printer like a robot's eyeball. It isn't very responsive, and lacks the fancy visuals of the best Lexmark printers, but it's more intuitive than a button interface.

A capacious 250-sheet tray is standard. When combined with the 50-sheet and optional 500-sheet feeds, there's potential for 800 pages in all. The monthly duty cycle of 50,000 pages is handy, too.

The M401dw is the most expensive of the models in the line. The M401dw, M401dn and M401n all include a gigabit ethernet port; only the M401dw offers Wi-Fi. The M401n exchanges the 3.5in touchscreen for a basic two-line LCD. Whereas the M401dw and M401dn have 256MB memory and auto-duplexing, the cheaper M401n has just 128MB of memory and manual duplexing.

It also does without Walk-Up USB - a nice feature that allows you to plug in a USB drive and print files directly.

All three models support a wide range of printer languages, from PCL5e and PCL6 to PostScript 3 emulation. Up to 84 scalable TrueType fonts are supported.

The HP is mono-only, but it delivers good speed. It turned out our 10-page test document at a fast rate of 26.1 pages per minute (ppm).

The text is of very good quality, with beautifully defined characters. It's not the thickest of output, but it is extremely easy to read.

The speed drops by almost half (13.6ppm) in auto duplex mode. This is still a good turn of speed.

You won't buy this printer for graphics, but it shows a reasonable depth of greyscale and can make a decent job of presentations.

The HP 80X LaserJet cartridge costs around £120 online, and is specified for 6,900 pages. This



suggests running costs of around 1.7p per page. That's very decent for a business printer, if not as cheap as the Kyocera Mita FS-1320D.

Verdict

The HP LaserJet Pro 400 is a well-featured printer that has strong specifications for use in the office. The M401dw has excellent connectivity alongside an accessible (if unresponsive) touchscreen. Add good paper handling and excellent print quality and it's a capable business printer that does almost everything you require of it with aplomb. Robin Morris

PRINTER

Brother MFC-8520DN

No-one can accuse Brother of being slow off the mark. It was only a few months ago that it brought out mono laser printers for both corporate and SME markets. Now Brother has added a further six to that collection.

The MFC-8520DN is the topof-the-range model for smaller businesses. As with all the current crop of Brother mono lasers, it has a solid build (a weighty 16kg), yet manages to be relatively compact, at 405x415x423mm.

It's styled in the familiar matt black fashion, and offers three paper sources: there's a 250-sheet standard paper tray in the base, a drop-down 50-sheet multipurpose tray at the front, plus a 35-sheet ADF on the top. You can add a 500-sheet expansion tray (£90) to the bottom if required.

Those familiar with Brother's control panels will immediately recognise the user-friendly layout, with One-Touch dial keys for faxing on the left, large fax, scan and

copy buttons in the middle, and a number pad to the right. Alas, there are no touchscreen controls here – instead, an old-fashioned five-line, 22-character LCD.

Connectivity is a tad limited, with only USB and ethernet, but the Brother offers auto-duplexing in all four copy, scan, print and fax modes, which could help you make mighty savings in the long term.

The MFC-8520DN earns its stripes through good performance. In our tests standard documents were available at 34ppm, which is just 2ppm short of Brother's claims. Duplex copies were available at an admirable 18ppm.

Photos and graphics provide a reasonable degree of detail, but in our tests the output was of a distinctly darker shade than the original. Black quality on text documents, on the other hand, is solid and unbroken, while scanned photos are vibrant and authentic.

If you ignore the derisory 2,000-page toner that comes in the



box, you'll pay around 2.6p per page with the standard 3,000-page toner installed, and 1.5p per page with the larger 8,000-page version. At these prices, the Brother is certainly worthy of your consideration.

Verdict

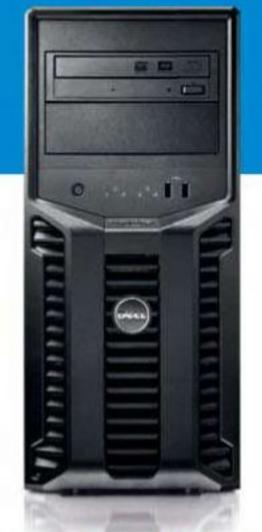
Brother's MFC-8520DN is fast, prints good-quality text documents, is cost-efficient and offers autoduplexing in all four print, copy, scan and fax modes. Only its lack of Wi-Fi connectivity and touchscreen control keep it off our must-have list.

Martyn Clayden





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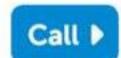


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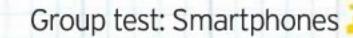
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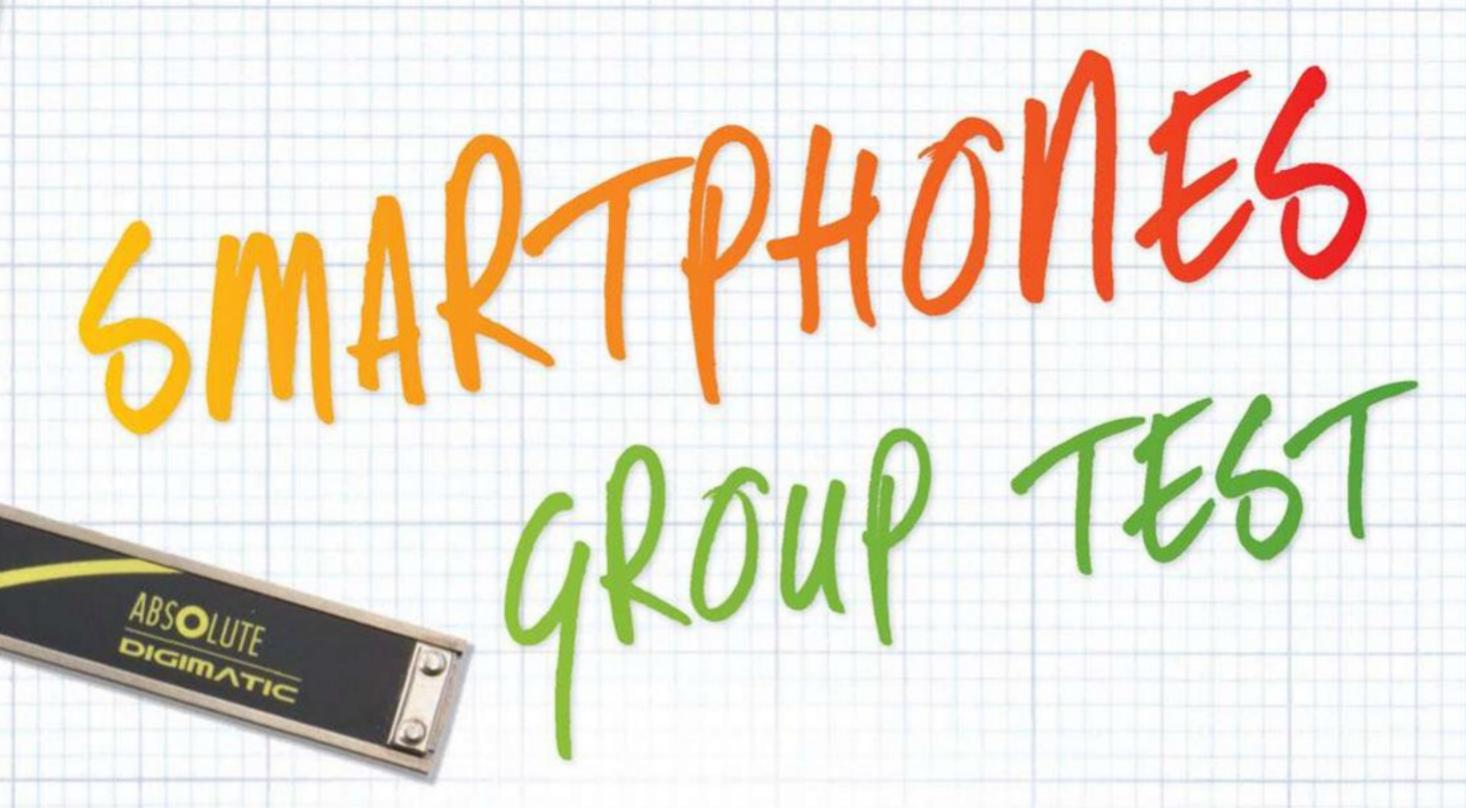
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We take an in-depth look at six mid-range Android smartphones. Reviews by Marie Brewis, David Court and Chris Martin. Introduced by Andrew Harrison

f it's variety and choice you're looking for when choosing a smartphone, Google's hardware partners offer plenty of options.

uTube

mm

Apple is content to rest on its successful iPhone laurels, releasing just one model per year. RIM is losing user interest, as well as market share, as its BlackBerry 10 OS update is continually delayed. And Microsoft is languishing in distant last place – something it hopes to change with the release of Windows Phone 8 in the coming weeks.

That leaves smartphone manufacturers with a choice of Android or Android. There's a wider selection of smartphones running Google's software now than ever, with cheap-and-cheerful handsets starting at around £100, up to expensive models that hope to rival the iPhone.

We've rounded up six mid-range Android handsets, from Google's hardware allies HTC, Intel, Samsung, Sony and ZTE. Motorola is also onboard, now wholly owned by and run as a subsidiary of Google.

When looking for a smartphone, keep in mind the critical requirements: to make phone calls, send texts and emails, surf the web, and snap photos and video.

All these activities will sap the phone's battery, so look for a model that won't leave you dry before the end of one day. Android phones are not renowned for their fuel economy, and many still struggle to last beyond a full day with typical usage. If you don't want to be caught short, look for a phone that lets you swap in a spare battery, or carry a Micro-USB charging cable with you. The Motorola Razr Maxx reviewed here is a notable exception to this rule.

While Google may update its Android software at least once per year, phone makers drag their heels with updates. The most popular software on an Android phone is still 2010's Gingerbread 2.3, despite Jelly Bean 4.1 being on the scene.

Some Android phones never receive software upgrades from the manufacturer. If you like the idea of keeping your phone fresh with timely updates and upgrades, you may need to consider a different platform.

Many people still acquire their smartphones from a network operator on a long-term contract, which hides the true price of the hardware. We've quoted contract-free prices where possible. For between £200 and £300, you can expect a capable phone with all the key features: GPS, 5Mp-plus camera, HD video recording, Wi-Fi and Bluetooth.

Extras you may find include near-field communication (NFC), and the ability to expand the handset's storage with a removable memory card. Note that NFC is still a solution looking for a problem - there is little or no infrastructure in the UK to make use of contactless payments from a phone. SD card storage is often omitted as a cost-saving measure, letting the manufacturer avoid paying royalties to Microsoft for its FAT patents. If your chosen phone doesn't offer the facility, look for a minimum of 16GB built-in storage.



HTC ONE S

£415 inc VAT • htc.com/uk • tinyurl.com/bsxfL6g

The One S is the smaller sibling of HTC's flagship One X (reviewed at tinyurl.com/czcjes7). A 4.3in screen sits flush with the thin and light aluminium chassis, which feels both strong and durable.

As a mid-range model the One S loses the quad-core processor of the One X, instead taking a 1.5GHz dual-core chip with 1GB of RAM. However, in a side-by-side race we found it outclassed the One X when opening apps, and rendered websites with the same speed.

In Geekbench, the One S averaged 685 points; interestingly, the One X managed only 592. Although this is the lowest score in our group test, Geekbench performance isn't the be all and end all. We found everything from navigating apps and browsing the web to playing HD video operated smoothly on the One S.

There's 16GB of non-expandable internal storage, and HTC has partnered with Dropbox to offer 25GB free cloud storage. This is time-limited to 24 months, the length of many mobile contracts.

We found the One S' 4.3in display more manageable than the 4.7in display of its sibling, but its quality is less impressive. Whereas the One X offers a pixel density of 312ppi, the S has just 256ppi. This is standard at this price, and beaten here only by the San Diego.

The 8Mp rear camera has a 28mm lens and a BSI sensor for improved low-light performance. The autofocus and burst mode work effectively, and images are sharp and vibrant. A front-facing 640x480 cam produces a grainy image, but it's adequate for video chat.

The preinstalled ImageSense app is speedy and easy to use. Tapping the video button triggers 1080p recording, without you having to toggle the capture mode. Stills can be captured mid-shoot.

HTC has applied its Sense interface to Android Ice Cream Sandwich. The combination provides a smooth user experience.

Plenty of widgets can be added to the seven home screens, and the lock screen adds weather and four user-defined apps.

HTC has equipped the One S with a 6.11Wh battery, out of which we squeezed a weekend of light usage and a standard working day.

VERDICT: The HTC One S is an excellent mid-range Android handset. It lacks some features of the more expensive One X, but it offers longer battery life and is more comfortable in the hand. CM



MOTOROLA RAZR MAXX

£379 inc VAT • motorola.com/uk • tinyurl.com/98od9qg

The Razr Maxx is closely modelled on Motorola's original Razr smartphone, but it's slightly fatter to accommodate a larger battery.

It feels as solid as a rock, with a Gorilla Glass front and woven Kevlar rear. Power and volume buttons are on the right, while Micro-SIM and micro-SD card slots hide below a flap on the left.

The Razr Maxx copies its predecessor's spec, with a 1.2GHz dual-core processor and 1GB of RAM. This combination performed well in our tests, scoring 1,084 points in Geekbench 2.

If 16GB internal storage allocation isn't enough for your apps and music and video collection, you can add up to 32GB via the aforementioned microSD slot.

The Motorola's 4.3in Super AMOLED screen comprises 540x960 pixels. Bright, vivid and reasonably sharp, it has a pixel density of 256ppi. The large size lends itself well to browsing, gaming and video.

There are two cameras: an 8Mp rear snapper with LED flash, plus a 1.3Mp front-facing cam. The camera app, accessible via the lock screen, offers a range of effects and settings. Results in our tests were consistently good, with detailed and natural-looking photos. Full-HD video recording is also possible.

When we reviewed the Motorola Razr Maxx it was running Android Gingerbread 2.3.6, although Motorola is now rolling out an update to Android Ice Cream Sandwich 4.0.

The user interface runs well, with smooth animations. Plenty of apps are preloaded, including the usual gang of Google services, Amazon Kindle, Quickoffice and GoToMeeting. Don't get excited by the appearance of Need for Speed: Hot Pursuit - it's a trial version.

We liked Motorola's own Smart Actions app, which adjusts settings based on user-defined parameters. It can, for example, turn off certain functions when the battery drops below a certain level, or enable silent mode at specified times.

A whopping 12.2Wh battery doesn't disappoint. The Maxx lasted four days before needing a recharge, making this perhaps the longest-lasting smartphone on the market today.

VERDICT: Motorola's Razr Maxx has a decent specification, and its exceptional battery life makes it stand out from the crowd. CM



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Orange's San Diego is the first Intel-powered smartphone to hit the UK. It's been on the cards for years, but the PC and laptop processor maker first had to reduce the power consumption, heat generation and dimensions of its x86 chips to cram them into mobile devices.

The San Diego runs Android 2.3.7, with an upgrade promised to Ice Cream Sandwich. It looks more like an iPhone 4 than the army of Google phones with which it competes, and feels sturdy, if plasticky.

The 4.03in 1024x600 touchscreen turns in the highest pixel density in this group, but it looks dim at the default setting.

The Intel Atom Z2460 chip inside is clocked faster than most smartphone processors, at 1.6GHz, although it's only a single-core model. Paired with 1GB of memory, the San Diego put in a fantastic performance in Geekbench, where it scored 889 points. It also beat its rivals here in the SunSpider JavaScript test, with 1,384ms.

Some third-party apps must pass through an emulation layer to operate on an x86 rather than ARM CPU, but we found only around 10 percent of the top 200 free and paid-for apps refused to install.

The 16GB of internal storage is non-expandable, and it's worth noting that only 10.71GB is available to the user.

Intel has left Orange to interpret Android as it sees fit, and it's responded with a lick of orange paint in the interface and the addition of branded apps such as Orange Gestures and Wednesdays.

A Swype keyboard is available, with which you can quickly draw a path through letters rather than tapping each key. The San Diego also supports Wireless Display and NFC.

Unlike most budget phones, the San Diego has an 8Mp rear camera with LED flash and a plethora of manual settings. There's so much to play with that you may not notice its dull, blurry and poorly lit pictures. Recorded HD video is also a let-down.

Battery life is a sore point: with normal usage, we found the battery was down to 41 percent after just 10 hours.

VERDICT: The San Diego is fast, cheap and has a good screen. But the battery life is poor, the storage can't be expanded, and some of your favourite apps may not even work. Still, if this is what the Z2460 has to offer, we can't wait for next year's Z2580. MB

SAMSUNG GALAXY ACE 2

£220 inc VAT • samsung.com/uk • tinyurl.com/cxeyoyh

At first glance, the Galaxy Ace 2 looks very similar to its Ace and Ace Plus predecessors. Improvements are found in the front-facing camera, larger display and extra gigabyte of storage.

The Ace 2 is slightly underwhelming in the looks department, but it feels great in the hand. At 119g, it's very light, and its 3.8in touchscreen requires very little thumb-stretching.

An 800MHz ARMv7 dual-core processor falls way short of the Exynos 4 Quad found in the company's flagship Galaxy S III in performance, but it provides ample propulsion for a mid-range smartphone. Apps load quickly, and the Ace 2 can cope with the strain of multiple open applications.

A 725-point score in Geekbench places the Galaxy Ace 2 toward the bottom of our pack in performance, although it's significantly faster than the slightly more expensive HTC One V, which scored 282 points - and speedier than the One S and One X, too, for that matter.

We also put the Ace 2's web browser through its paces in the SunSpider test, where it recorded 2,997ms. This is unimpressive in the face of the competition, although we've seen worse and, in real terms, it was able to render our favourite sites in a timely fashion.

You'll quickly run out of storage space with just 4GB on offer, particularly given that the Android OS itself consumes a couple of gigabytes. Fortunately, Samsung has added a microSD slot, into which you can insert memory cards up to 32GB in capacity.

Cameras are fitted front and rear, with a 5Mp snapper capable of acceptable photography. At 0.3Mp, the Galaxy Ace 2's secondary camera is useful only for video chat.

The Ace 2 runs the two-year-old Android Gingerbread platform. This is no surprise on a £220 handset, but disappointing nonetheless.

The onscreen keyboard is surprisingly usable for such a small device. Typing easy, but the Ace 2 lacks haptic feedback.

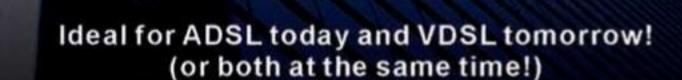
Battery life is rather average; the Galaxy Ace 2 still had a little juice to spare after a full day of normal usage.

VERDICT: This mid-range smartphone covers all the basics and isn't appalling in any area. If you don't need the fastest, most stylish handset out there, it's worthy of consideration. DC

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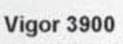
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SONY XPERIA GO

£200 inc VAT • sony.co.uk • tinyurl.com/cdxkfgp

The Xperia Go is a mid-range Android smartphone that will withstand the odd bump or scrape, with an IP67 rating attesting to its superior dust- and waterproof protection credentials.

The Sony is available in standard-issue white or black, as well as a more vibrant yellow. It's distinctly square-looking, like other Xperias, but comes without the lightshow below the screen. It's also more compact, at 60x111x9.9mm, and lighter, at a trim 108g.

Solid is the term best used to describe the Xperia Go, even if the card tray fell apart when we removed our SIM. It survived a dunk into a bowl of water (watch the video at tinyurl.com/c7rLfuL), although the screen was unresponsive during its swim. It also behaved rather erratically when water was dripped on to the display.

At around £200 SIM-free, the middling price reflects the hardware inside. There's a 1GHz ARM Cortex-A9 dual-core processor (the same chip as is found inside the more expensive Xperia P), 512MB of RAM, 8GB of storage and a 5Mp camera. But the 3.5in screen has a low resolution of just 320x480 pixels, and the Sony runs old Android 2.3. An upgrade to Ice Cream Sandwich is promised.

Connectivity options are rather standard, with 802.11n Wi-Fi, Bluetooth and DLNA. Micro HDMI and NFC aren't supported.

Performance is toward the bottom of the group, but usable nonetheless. The Xperia Go averaged 877 points in Geekbench 2, and returned 2,650ms in the SunSpider JavaScript test.

Unlike most Xperia handsets, there's no dedicated camera/shutter button, although you can unlock the screen and snap a picture with a single swipe from the lock screen. The results are fuzzy, washed out, and reveal a problem with focus. The 720p video is also a let-down.

The user interface is attractive and easy to use, with Timescape providing integration with Twitter and Facebook. A range of widgets can be added to the home screen, but there are too many preloaded apps for our liking - only some of which are removable.

One day's use is all you can expect from the Xperia Go's tiny battery: you'll need to charge every night.

VERDICT: The Xperia Go is compact and robust, but it isn't the fastest mid-range handset and both camera and battery life are poor. CM



ZTE GRAND X

£200 inc VAT • zteuk.co.uk • tinyurl.com/ckbx3my

The £200 ZTE Grand X is available on Virgin Media pay-as-you-go, and it offers fast performance and some strong specs.

The front is dominated by a large 4.3in touchscreen, while a pebble-like design makes the handset comfortable to hold - although, at 142g, the Grand X isn't as light as ZTE would have you believe.

The handset feels solid overall, but we'd prefer more tactile feedback from the hardware buttons.

A 1GHz nVidia Tegra 2 dual-core processor is paired with 512MB of RAM. This combination enabled the ZTE to score 928 points in Geekbench, and a healthy, if not the fastest, 2,192ms in SunSpider.

The internal storage is limited to a meagre 4GB, but ZTE has helpfully included a microSD slot for expansion up to 32GB.

In common with the HTC One S and Motorola Razr Maxx, a 4.3in, 540x960-pixel screen returns a pixel density of 256ppi. This display is the main highlight, and you'll have to look elsewhere for features such as HDMI and NFC.

The Grand X is designed for gamers not photographers, with basic 5Mp rear and 0.3Mp front cameras. Results from the main snapper are washed-out and grainy, and there's significant lag after pressing the shutter. Recorded video is better, but it doesn't atone for the shocking quality of the fuzzy, slow-to-refresh front-facing camera.

ZTE has left Google's Android 4.0 platform well alone. The standard-issue eye candy should mean the OS runs smoother and reduces the chance of battery wastage. This will be important, since the 6.1Wh cell couldn't even see us through a single day of light use.

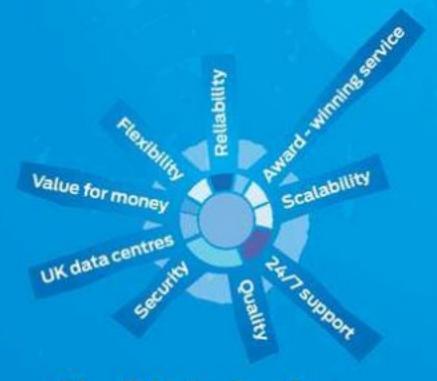
The Grand X comes with a demo version of Riptide GP, a fun jetski game. Besides Google Play, there's also an nVidia Tegra Zone for downloading Tegra-optimised games. And ZTE preloads Evernote, Full Share and the basic X-Office.

A TouchPal keyboard takes some getting used to, but it works well, with the option to use Swype-style input.

VERDICT: ZTE's Grand X delivers on some levels, with reasonable specifications and an enticing price tag. It will play games and suits video content, but keep in mind the poor photography potential and terminal battery life. CM



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Conclusion

The Samsung Galaxy Ace 2 and Sony Xperia Go are both likeable handsets - the Sony for its ruggedness, and the Samsung for its balanced feature set at a realistic price.

The Grand X from ZTE tries to rival top-end smartphones at an affordable price. Despite its slightly newer installation of Android Ice Cream Sandwich 4.0 and generous 4.3in screen, it's sorely lacking in both the battery and camera departments. The specs may look good on paper, but ZTE needs to make a more practical package.

Raw performance is not wanting for the Orange San Diego, the first Intel-designed smartphone. It's a quick handset with a good screen, but that power is wasted on its short-lived battery. Intel is still promising to make a processor suitable for mobile phones;

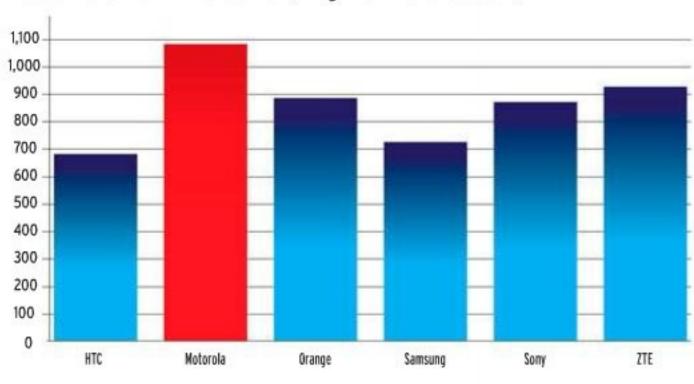
the Z2460 found inside this handset is not it. We're looking forward to testing next year's even more powerful Z2580.

HTC's One S is the most expensive phone in this group, although it's a cheaper option than its One X flagship brother. Its storage is limited to 16GB, but it's more manageable and, in some respects, faster than the One X. If you want a phone with the latest styling and a trendy big screen, look to the One S.

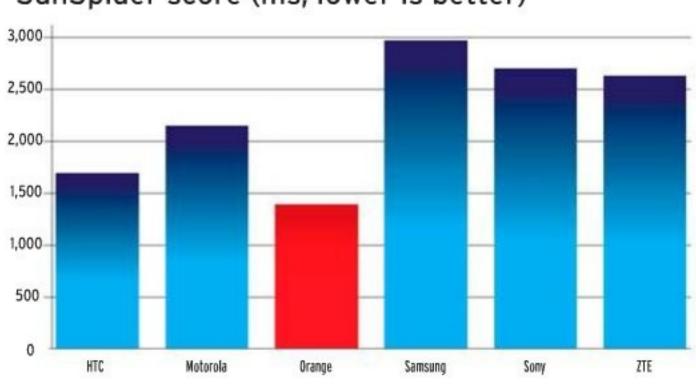
If your idea of performance is a phone that can deliver day after day, the Motorola Razr Maxx deserves your keen attention. It has a useful turn of speed, plenty of features, and potential to expand its limited storage. It's not the lightest or slimmest phone in town, but good build quality and battery life earns it our recommendation.

	HTC £415 inc VAT PC ADVISOR RECOMMENDED	MOTOROLA £379 inc VAT PC ADVISOR BEST BUY	ORANGE £210 inc VAT (PAYG)	
Model	One S	Razr Maxx	San Diego	
Processor	1.5GHz Qualcomm Snapdragon (ARM, dual-core)	1.2GHz Texas Instruments OMAP 4430 (ARM, dual-core)	1.6GHz Intel Atom Z2460 (x86, single-core)	
Graphics	Adreno 225	PowerVR SGX540	PowerVR SGX540	
Display size	4.3in, 540x960, 256ppi	4.3in, 540x960, 256ppi	4.03in, 1024x600, 295ppi	
Display type	TFT	Super AMOLED	TFT	
Operating system	Google Android Ice Cream Sandwich 4.0.3 (update to Jelly Bean 4.1 expected)	Google Android Gingerbread 2.3.6 (update to ICS 4.0 rolling out at press time)	Google Android Gingerbread 2.3.7 (update to ICS 4.0 expected)	
Memory	1GB	1GB	1GB	
Storage	16GB	16GB	16GB	
Card slot	None	microSDHC	None	
Wi-Fi	802.11b/g/n	802.11b/g/n	802.11b/g/n	
Bluetooth	4	4	2.1	
Cellular	GSM/GPRS/EDGE 850/900/1,800/1,900MHz, HSPA/WCDMA 850/900/2,100MHz	GSM 900/1,800/1,900MHz, UMTS 2,100MHz with HSDPA	GSM/GPRS/EDGE 850/900/1,800/1,900MHz, UMTS/HSPA 850/900/1,900/2,100MHz	
SIM type	micro-SIM	micro-SIM	micro-SIM	
GPS	A-GPS	A-GPS, Glonass	A-GPS, Glonass	
Camera(s)	8Mp rear camera, BSI sensor, 0.3Mp front camera	8Mp rear camera, LED flash, 1.3Mp front camera	8Mp rear camera, LED flash, 1.3Mp front camera	
Video	1920x1080	1920x1080	1920x1080	
Headphones	3.5mm headset jack	3.5mm headset jack	3.5mm headset jack	
Ports	Micro-USB	Micro-USB, Micro HDMI	Micro-USB	
Other	None	None	NFC, DLNA	
Battery	6.11Wh lithium, non-removable	12.2Wh lithium	5.4Wh lithium	
Dimensions	65x131x8.3mm	69x131x10.6mm	63x123x9.9mm	
Weight	120g	144g	117g	
Geekbench 2	685	1,084	889	
SunSpider	1,708ms	2,177ms	1,384ms	

Geekbench 2 score (higher is better)



SunSpider score (ms, lower is better)



SAMSUNG £220 inc VAT	SONY £200 inc VAT	ZTE £200 inc VAT (PAYG)
****	****	****
Galaxy Ace 2	Xperia Go	Grand X
800MHz NovaThor U8500 (ARM, dual-core)	1GHz NovaThor U8500 (ARM Cortex A9, dual-core)	1GHz nVidia Tegra 2 (ARM Cortex A9, dual-core)
ARM Mali-400MP	ARM Mali-400	nVidia ULP GeForce
3.8in, 480x800, 246ppi	3.5in, 320x480, 165ppi	4.3in, 540x960, 256ppi
TFT	TFT	TFT
Google Android Gingerbread 2.3.6 (update to Jelly Bean 4.1 expected)	Google Android Gingerbread 2.3.7 (update to Ice Cream Sandwich 4.0 expected)	Google Android Ice Cream Sandwich 4.0.3 (no update scheduled in the UK)
768MB	512MB	512MB
4GB	8GB	4GB
microSDHC	microSDHC	microSDHC
802.11b/g/n	802.11b/g/n	802.11b/g/n
3	3	2.1
GSM 850/900/1,800/1,900MHz, HSPA 900/2,100MHz	GSM 850/900/1,800/1,900MHz, HSPA/WCDMA 850/900/1,900/1,900MHz	GSM 900/1,800/1,900MHz, UMTS 900/2,100MHz
mini-SIM	mini-SIM	mini-SIM
A-GPS, Glonass	A-GPS	A-GPS
5Mp rear camera, CMOS with LED flash, 1Mp front camera	5Mp rear camera, LED flash, no front camera	5Mp rear camera, LED flash, 0.3Mp front camera
1280x720	1280x720	1280x720
3.5mm headset jack	3.5mm headset jack	3.5mm headset jack
Micro-USB	Micro-USB	Micro-USB
FM radio	DLNA	None
5Wh lithium, removable	4.8Wh lithium, non-removable	6.1Wh lithium, removable
118x62x10.5mm	60x111x9.9mm	65x127x9.9mm
119g	108g	142g
725	877	928
2,997ms	2,650ms	2,192ms



be. A lightweight 7in device is better suited to use on the move - it can be uncomfortable to hold a 10in tablet for extended periods, for

Screen resolution is an important consideration, too. A higher resolution not only puts more detail in images, but it makes text crisper and easier to read. That's important when you're viewing web pages designed for desktop computers.

example when watching a movie on a plane.

Just about any tablet is fine if you simply want to send emails and use Facebook, but some cheaper tablets skimp on processing power and can be frustratingly slow. Apps take longer to load and some demanding websites, such as Google Maps, or those that make heavy use of Flash, can bring an underpowered tablet to its knees.

Most Android tablets give you access to the Google Play store. This is packed with downloadable apps that let you expand the capabilities of your tablet, whether that's editing photos, playing games or putting together presentations. Many Android apps are free, and some cost a few pounds.

stores tend to have a limited choice and may charge more for their wares.

None of the tablets we've reviewed here has a SIM slot, but several are available in a more expensive Wi-Fi + 3G version. If you need to stay connected on the move, this may be useful.

If you're planning on storing your entire media collection on your tablet, you'll need to buy the largest-capacity model you can afford. Alternatively, look for a device with an expansion slot. This way you can plug in an inexpensive memory card, or even have several memory cards to store your content.

It's not a laptop

It's crucial to understand that a tablet won't replace your PC. There are some tasks for which a tablet isn't capable of handling. If you spend much of your time using Microsoft Office, you're not going to like a tablet's small screen and lack of a keyboard and mouse. You can't burn a CD either, and printing isn't always possible.

Tablets group test Ø 3 3 3 3 3 3 3 3 3 7 **



ARCHOS 101 XS

£299 inc VAT • archos.com • tinyurl.com/ctkeryz

The 101 is the first Android tablet from Archos' new XS range and one of the thinnest we've seen at just 8mm. It comes with a keyboard that converts into a cover when you're not using the tablet - a bit like the Asus Transformer Pad 300, but there's no battery in the keyboard.

The cover is held in place by strong magnets, and more magnets hold the 101 XS when docked into the keyboard. A small stand can be adjusted to change the tablet's tilt angle.

Despite the reasonable price, the 101 XS has a fast dual-core processor and IGB of RAM. The 10.1in screen has a standard resolution of 1280x800. There's also 802.11n Wi-Fi, Bluetooth 4.0, GPS, and a front-facing camera and mono speaker. You get 16GB of storage and you can add up to 64GB with a microSD card.

Inevitably, there's a trade-off between thinness and rigidity; the thing that concerns us the most is that pressing too hard on the screen left causes ripples, so you need to be careful. We didn't like the power and volume buttons lying flush with the edge of the case either, which makes them difficult to locate.

On the side are microSD, Micro-USB and Micro HDMI ports, plus a headphone socket. At the bottom is an X-pin connector, which can be used to attach accessories such as a speaker dock.

In our benchmarks, the Archos 101 XS recorded 1,407 points in Geekbench and 1,575ms in the SunSpider JavaScript test. It's a fast tablet, with performance that's on a par with Google's Nexus 7.

The 10.1in screen's glossy finish means it's very reflective, and its rather average brightness prevents you from minimising reflections when ramping it up to its maximum setting. Colours, viewing angles and contrast are all decent, however.

The keyboard dock is one of the main reasons you might want to buy the 101 XS, and it frees up a lot of screen space in comparison with an onscreen version. It has separated keys with just enough travel to give feedback for quick typing. There are also plenty of shortcut keys, so you almost never need to touch the screen.

The keyboard works well when typing with the tablet propped up on a desk, but held on our lap it failed to register keystrokes when typing with normal force.

VERDICT: The 101 XS is Archos' best tablet to date. With a less fiddly keyboard and a £100 lower price tag, Archos has made a decent attempt at undercutting the Asus Transformer Pad 300, too. However, the dock was reliable only on a desk in our tests, and other build quality issues mean we can't unequivocally recommend it. JM



GOCLEVER TAB A73

£90 inc VAT • goclever.com • tinyurl.com/d4hgm98

GoClever is a new name to us. Its Tab A73 is the spitting image of the Kurio 7, albeit in a more demure livery and without the rubber bumper. In fact, it's the same tablet, with a few differing specs.

In comparison to the Kurio, the Tab A73 has the same 7in, 840x400 screen, the same Mini-USB and Mini HDMI ports, and the same 4GB of internal storage. One difference is the processor: it runs at 1GHz rather than 1.2GHz. There's also just 512MB of RAM. Both are understandable, given the ridiculously low price, but have a detrimental effect on performance.

Although you can smoothly scroll between home screens on the A73, it's a different story when browsing the web. The frustrating experience sees you waiting several seconds for Google Maps to redraw each time you scroll or zoom, and the BBC website took an unacceptable 20 seconds to load.

The SunSpider JavaScript test reveals just how slow the A73 is: it took a foot-tapping 13,528ms to complete the benchmark, which Google's Nexus 7 completed in just 1,665ms.

Gaming performance is better, thanks to the Mali 400 graphics chip. The A73 had no problems running Angry Birds, for example.

The screen suffers from the same narrow viewing angles as the Kurio in portrait mode, and the low resolution is noticeable, with text appearing blocky or blurry. This is, perhaps, acceptable at this price.

Video, however, plays flawlessly and looks good. Given that the device weighs only 350g, it's comfortable to hold while watching a TV show on the train, for example. The only problem is the relatively dim and reflective screen. The tablet had no difficulty playing our 1080p H.264 video, and was happy to output it via HDMI to our TV.

You get a vanilla Android 4.0 Ice Cream Sandwich interface and, importantly, access to the Google Play store. Google Maps, Gmail and Latitude are preinstalled.

As well as 802.11n Wi-Fi, Bluetooth is built-in, but there's no GPS receiver. You can use the Mini-USB port for a 3G dongle. There's no rear camera, and the front VGA camera is good only for video calls.

Build quality is decent, although it's all too easy to press the power button in its position at the top-right corner.

The tablet's battery life matches GoClever's claims, but 4 hours 8 minutes of video playback is unimpressive.

VERDICT: If you have a very tight budget for a 7in tablet, the Tab A73 looks tempting. It's fine for playing video and casual gaming, but not so hot for web browsing. Stretch your budget a little if you can. JM







GOOGLE NEXUS 7

£159 inc VAT • play.google.com • tinyurl.com/cgba439

Google has finally entered the tablet market with its Asus-made Nexus 7. This 7in (1280x800) tablet is the first we've seen to run Android 4.1 Jelly Bean. It's also thin and light, at 10.9mm and 336g.

Designed to be predominantly used in portrait mode, we found one-handed use in either orientation comfortable. A dark brown textured rear cover has a rubbery feel to aid grip.

Buttons and ports are kept to a minimum: on the right are power and volume; Micro-USB and headphone jacks are found on the bottom edge; and a four-pin side dock can be used for accessories. Stereo speakers are also here, concealed behind a long slot.

Despite the price, the Nexus 7 is a well-made, premium tablet. We saw some rippling at the top and bottom edges of the screen when pressed hard, though.

A quad-core CPU and IGB of RAM are highlights for the Nexus, and allowed it to average a very good 1,452 points in Geekbench.

The in-plane switching (IPS) screen provides excellent contrast, brightness and viewing angles. It's great for web surfing and playing games, but even better for watching films.

Storage is a sore point: you get only 8GB at this price, or 16GB for £199; neither are expandable through removable memory cards. Note that the Android OS alone gobbles up around 2GB of storage.

There's no 3G version, but Bluetooth, GPS and NFC are built-in. The Nexus 7 also supports 802.11b/g/n wireless.

Web surfing with the default Chrome browser is smooth; pages load quickly, while zooming and scrolling are similarly speedy.

Unlike most tablets, the Nexus 7 doesn't have a rear-facing camera. A 1.2Mp front webcam handles video chat.

Android 4.1 looks much the same as Ice Cream Sandwich, but Google has improved the OS' performance and responsiveness. Jelly Bean is slick, and closes the gap between Android and iOS.

Notifications now show more information about each alert, and let you carry out tasks without launching the associated app.

Dictation can work offline, and Google Now tries to predict the information you need before it's requested. Oddly, Home screens display only in portrait mode. Also note that Flash isn't supported.

The Nexus 7's battery life is seriously impressive: our video looped for a whopping 9 hours and 40 minutes.

VERDICT: Google has set a new standard for budget tablets: this is the best tablet you can buy if you don't need a 10in screen. It may soon see some tough competition from the Kindle Fire HD, though. CM



KURIO 7

£150 inc VAT · kurioworld.com · tinyurl.com/d2mls3w

On paper, the Kurio 7 almost lives up to its tagline as 'the ultimate Android tablet for families'. It has a customised interface and preloaded content for children, full controls and access to the Android Ice Cream Sandwich interface for parents, web and content filtering, plus a protective rubber bumper.

Turn on the device and you're guided through creating user profiles, choosing age-appropriate content filters and specifying which apps can be accessed. You can also state at which times the device can be used by a particular user, and for how long. A global control lets you set a start and end time for each day, too.

Although none would break the bank if you were to buy them from Google Play, it's good to see Angry Birds, Cut the Rope, Fruit Ninja, World of Goo, Doodle Jump and Where's My Water? preinstalled. Separate Boys Colour and Girls Colour apps are also decent, while MeeGenius includes 20 books that are read aloud, with the words highlighted on the page to help your child learn to read.

Other apps are less impressive. Preinstalled Mr Nussbaum games look as though they were made in the 1980s, and present basic arithmetic puzzles that don't reward kids for doing well.

Although the Kurio 7 supports Flash, some kids' websites wouldn't correctly load, such as mrmen.com. It also failed to play video on the popular Channel 5 Milkshake site. Plus, the low resolution means that most sites don't display properly, such as peppapig.com. The tablet's slow processor can't really handle these Flash-based sites anyway, and they run extremely slowly.

Kurio provides its own web browser and sensibly uses Google's SafeSearch for Kids, which provides reasonable protection when searching. If a questionable link does appears in the results, Kurio's content filter will usually kick in and block the site. The Kurio 7 is one of the better tablets to leave unsupervised with young children.

At this price, comparisons with Google's Nexus 7 are inevitable. The Kurio has a lower screen resolution, but it's the poor quality of the display that's the real problem, with limited viewing angles. The slower processor means websites take an age to load, and navigating Google Maps is a frustrating experience. Both cameras produce poorquality images and video. The Kurio 7's battery life is also short.

VERDICT: The Kurio 7 has a decent interface for children, content filtering is good and it doesn't require a paid subscription. A handful of preinstalled games will also keep kids entertained. However, the hardware is disappointing. This is not the ultimate family tablet. JM



SAMSUNG GALAXY TAB 2 10.1

£299 inc VAT · samsung.com/uk · tinyurl.com/cobspnu

Not so long ago, the nearest competition to the iPad was the original Galaxy Tab. Today, things are more complex. Not only is there the third-generation iPad, there's also the game-changing budget Google Nexus 7, high-end tablets such as the Asus Transformer Prime, and forthcoming rivals running Windows RT. The Tab 2 even faces competition from its own camp, in the form of the Galaxy Note 10.1.

The Tab 2 10.1 is now officially Samsung's bargain full-size tablet. It's not dissimilar to its predecessor, sporting a dual-core 1GHz processor and a 10.1in, 1200x800-pixel display.

There's 16GB of storage, and Samsung has added a microSD slot for expansion. You get a 3Mp rear camera, a VGA webcam for video calls, and GPS. A 3G version of the Tab 2 is also available for £419. But the major update is to the OS: Android 4.0 Ice Cream Sandwich.

Samsung has moved the speakers to the front, and the device is around 1mm thicker than its predecessor. The screen is pretty much unchanged: it's colourful and bright, and viewing angles are decent. Watching HD movies is a pleasure.

It's a fast enough device, and we had no problems in terms of web browsing or HD video playback. But the Nexus 7 and Note 10.1 are much zippier devices. Waking up from standby takes perceptively longer, as does opening and closing apps.

The Tab 2 had no problems dealing with a full working day of use on a single charge, but didn't perform well in our video battery test, lasting less than six hours.

You're not likely to take too many photos with a 10in tablet, so it's probably not too much of a bad thing that the rear camera is best described as adequate rather than a replacement for your dedicated camera. Images are grainy and flat. The 1080p video recording is worth having. It's not earth-shattering, but the level of detail is good and audio capture is half-decent, too.

As with the Note 10.1, Samsung has added its TouchWiz user interface to the Android interface. We could live without Samsung's apps dominating our home screen, but it is at least customisable. And although Google Play Movies & TV is a better app than Samsung's Video Hub, the latter contains a lot more content, and the opportunity to buy, rather than simply rent, movies.

VERDICT: The Tab 2 is a lot better than the original Tab, but its competition is stiffer. The iPad remains a cut above for £100 more but, if you want to stick with Android, Toshiba's AT300 has a quad-core processor for only £30 more. ME



TOSHIBA AT300

£330 inc VAT • toshiba.co.uk • tinyurl.com/c58eoga

Toshiba's 10.1in AT300 tablet is the company's best yet and runs Android 4.0 Ice Cream Sandwich. This is the 16GB model, but the 32GB version costs £379 - £100 cheaper than the equivalent iPad.

It's well built, and feels solid and well-balanced in the hands. We like its rounded corners and tapered screen edges, but it's a bit bland. Like the Galaxy Tab 2, it doesn't feel like a premium product.

The screen has a now-standard 1280x800-pixel resolution, and a bright LED backlight. Viewing angles are reasonable, but contrast isn't wonderful. Overall, it's no better than the Tab 2's display.

A quad-core processor makes for a slick experience when swiping between Android Home screens, and also when playing HD video or games. In Geekbench, the AT300 scored an impressive 1,575 points. It also completed the SunSpider JavaScript test in 2,056ms - not the best but, overall, the AT300 is a quick tablet.

There are lots of ports and connections, including Micro-USB and Micro HDMI, which allow you to connect external storage and a large-screen TV. A full-size SDXC card slot means you could even pop in the card from your camera to share and edit photos.

You also get 802.11n Wi-Fi, Bluetooth 3.0 and GPS; stereo speakers sit at the bottom edge. A proprietary dock connector and an inability to charge from a USB port are disadvantages shared with the Tab 2.

The front-facing 2Mp camera provides adequate quality for video chat. At the back is a 5Mp camera with a useful LED flash. Disappointingly, there's considerable shutter lag and the screen isn't bright enough to use as a viewfinder in sunny conditions.

The quality of both photos and video from the rear camera is below par. Colours are reasonable, but noise reduction (even in sunny conditions) results in a lack of detail. This is especially noticeable in textures such as foliage and brickwork.

Toshiba hasn't customised the standard Android interface much. You get media-player and file-manager apps. There's also a Toshiba Places app where you can buy music, videos and games, but it's somewhat redundant, given the Google Play icon just above it.

We were impressed with the AT300's battery life. The tablet easily lasting a day of use in our experience. It managed to endure almost 9 hours in our video-playback test.

VERDICT: The combination of great performance, decent battery life and a handy SD card slot makes the AT300 good value. The screen isn't the best we've seen, but it's far from bad. One potential pitfall is the absence of a 3G model. JM

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How we test

To compare battery life, we charge each tablet and then play a 1080p H.264 movie on loop with volume and brightness set to 50 percent. Wi-Fi is turned on, but Bluetooth and GPS are disabled. This test also allows us to assess the quality of the screen and speakers.

We use the SunSpider JavaScript benchmark to compare the speed of each tablet when browsing the web (a lower score is better), and the Geekbench app for general system performance (a higher score is better). You'll find the results in the feature table below, and shown graphically on the opposite page.

Graphics performance and touchscreen responsiveness are tested by how well a tablet copes with demanding 3D games. We test the accuracy of the touchscreen with general typing and navigation, particularly on text-heavy websites that require more precision when selecting options and clicking links.

We also test any cameras by taking pictures and video in a range of environments, both indoors and outdoors, to examine the speed and fidelity of the focus, colour and sound capture.

Conclusion

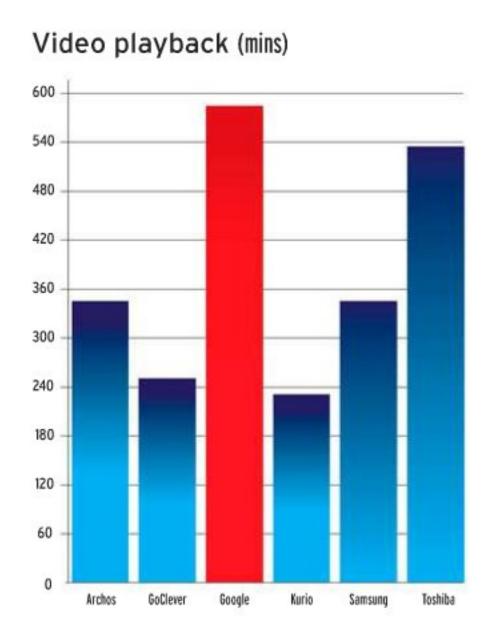
If you're looking for a 7in tablet, the Nexus 7 is the logical choice. The hardware offers very good value, and it makes most budget Android tablets look slow and poorly built by comparison.

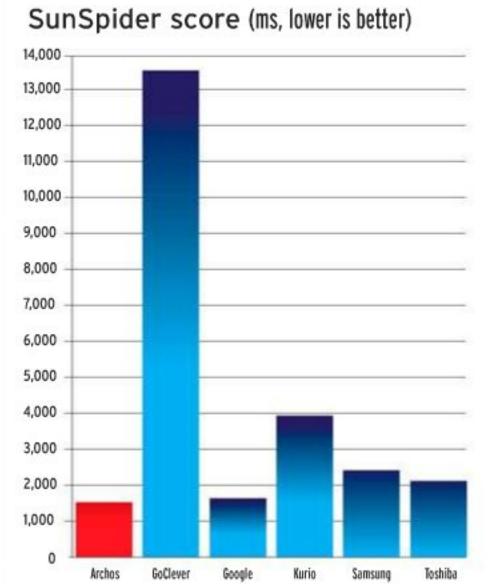
That could soon change, however, as Amazon's Kindle Fire HD is expected to launch at the end of October. It runs a heavily customised version of Android that doesn't have access to Google Play, but it offers twice the storage for the same £159 price. It also matches or beats the Nexus 7 in most other specifications. We'll bring you a full review in the next issue.

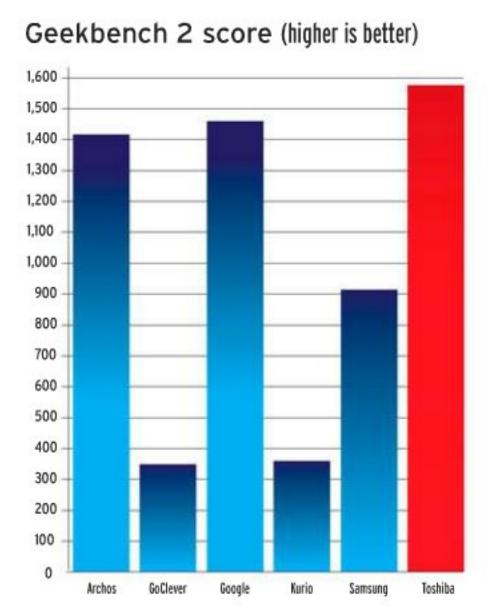
Those looking for a 10in tablet have an equally bewildering array of devices to choose between. The iPad remains king but, if you'd prefer to spend less or use an Android tablet, there are plenty of decent alternatives. Archos' 101 XS is a speedy, thin tablet with a handy keyboard, but build quality isn't the best.

Samsung's Tab 2 10.1, although a good step up from the original, struggles to compete with its new rivals; the Toshiba AT300 just edges it to receive our Recommended award.

	ARCHOS £299 inc VAT	GOCLEVER £80 inc VAT	GOOGLE £159 inc VAT PC ADVISOR RECOMMENDED	
Model	101 XS	A73	Nexus 7	
Product code	110890	TAB A73	Nexus 7	
Screen size (resolution)	10.1in capacitive multitouch (1280x800)	7in capacitive multitouch (800x480)	7in capacitive multitouch (1280x800)	
Operating system	Android 4.0.3 Ice Cream Sandwich	Android 4.0.3 Ice Cream Sandwich	Android 4.1 Jelly Bean	
Processor	1.5GHz TI OMAP 4470, dual-core	1GHz Allwinner A10, single-core	1.3GHz nVidia Tegra 3, quad-core	
Graphics chip	Imagination Technologies PowerVR SGX54	Mali 400	nVidia Tegra 3	
RAM	1GB	512MB	1GB	
Capacity tested	16GB	4GB	8GB	
Expandable memory	microSD (up to 64GB)	microSD (up to 32GB)	None	
Wi-Fi	802.11b/g/n	802.11b/g/n	802.11b/g/n	
Bluetooth	4	×	4	
3G	×	Via optional USB dongle	×	
Camera (front, rear)	1.2Mp, n/a	0.3Mp, n/a	1.2Mp, n/a	
Video recording	720p	640x480	720p	
GPS receiver	✓	×	✓	
Google Play store	✓	✓	✓	
Ports	Micro-USB, Micro HDMI, 3.5mm headphone	Mini-USB, Mini HDMI, 3.5mm headphone	Micro-USB, 3.5mm headphone	
Dimensions	271x169x8mm	195x122x11mm	199x120x10.6mm	
Weight	631g	350g	336g	
Warranty	1-year return-to-base	2-year return-to-base	1-year return-to-base	
Video playback (mins)	347	248	580	
Geekbench 2 score	1,407	353	1,452	
SunSpider score (ms)	1,575	13,528	1,665	







KURIO £150 inc VAT	SAMSUNG £299 inc VAT	TOSHIBA £330 inc VAT
****	XXXXXXX	RECOMMENDED
7	Galaxy Tab 2 10.1	AT300
CL1100	GT-P5110TSABTU	PDA08E-001005EN
7in capacitive multitouch (800x480)	10.1in capacitive multitouch (1280x800)	10.1in capacitive multitouch (1280x800)
Android 4.0.3 Ice Cream Sandwich	Android 4.0 Ice Cream Sandwich	Android 4.0.3 Ice Cream Sandwich
1.2GHz Allwinner A10, single-core	1GHz TI OMAP 4430, dual-core	1.3GHz nVidia Tegra 3, quad-core
Mali 400	Imagination Technologies PowerVR SGX540	nVidia Tegra 3
1GB	1GB	1GB
4GB	16GB	16GB
microSD (up to 32GB)	microSD (up to 32GB)	SD (up to 64GB)
802.11b/g/n	802.11b/g/n	802.11b/g/n
×	3	3
×	× (3G model available)	x
0.3Mp, 2Mp	0.3Mp, 3Mp	2Mp, 5Mp
720p	720p	720p
×	✓	✓
x	✓	✓
Mini-USB, Mini HDMI, 3.5mm headphone	Micro-USB, Micro HDMI, 3.5mm headphone	Micro-USB, Micro HDMI, 3.5mm headphone
195x122x11mm	257x175x10mm	260x179x8.9mm
352g	587g	593g
1-year return-to-base	1-year return-to-base	1-year return-to-base
235	348	537
363	908	1,575
3,913	2,369	2,056

Family PCs

A family PC has to be capable of handling a range of tasks. Paul Monckton looks at six systems that should please all members of your brood

PC designed for family use should deliver great all-round performance and value for money. Some of the systems in our group test also offer unique features that will appeal to hobbyist photographers or music lovers who don't want to hear noisy cooling fans.

The best systems should have excellent build quality, a home-friendly design, and useful accessories and peripherals that let you quickly get them up and running out of the box. A useful software bundle is also appreciated, while novice users will benefit from the guided setup of some machines.

If you're not itching to play the latest Windows games, you can save a considerable amount of money by selecting a PC that uses an integrated rather than dedicated graphics processor. In such systems, the main CPU handles both the application- and graphics processing. These chips, available from both AMD and Intel, are capable of handling full-HD video, as well as the latest games at moderate detail settings.

Important specifications

A powerful processor is the key to smooth, frustration-free performance, but unless you're processing large amounts of video or running industrial-strength applications, such as the full version of Adobe Photoshop, you won't need the very fastest chips available.

Intel's Ivy Bridge series offers
better performance than the previousgeneration Sandy Bridge processors.
Ivy Bridge chips, such as the Core
i5-3750, are an excellent choice for
those who want a very fast PC without
sacrificing value for money. For a
family PC, stepping up to the Core
i7-3770 is unlikely to be as beneficial

as spending your money on extra RAM or a solid-state drive (SSD). If you're trying to shave some pennies off the purchase price, come down to a slightly slower Core i5.

Chillblast supplies a core i5-3570K processor. Its 'K' suffix means the chip can be easily overclocked, provided that your motherboard also supports this feature. The i5-3570K offers faster integrated graphics than the standard i5-3570, too, so it's a good choice if you're not investing in a dedicated graphics card. It's only a little more expensive than the standard chip, but is not necessarily worth the extra outlay unless you want to overclock or take advantage of the integrated graphics.

AMD's Bulldozer chips, such as the 4.2GHz FX-4170 selected by CyberPower, can also offer very good value and come with integrated graphics. For occasional gaming or to accelerate video encoding, AMD's Fusion chips offer



still-faster integrated graphics. The trade-off is a reduction in application performance.

You can always upgrade the graphics setup later, of course, and an AMD Radeon





HD 7770 or nVidia equivalent would enable satisfying gaming at a reasonable price.

It's also important to consider the choice of mainboard used in your system. In some cases, newer processors will work with older motherboards. Some of the systems reviewed here combine Ivy Bridge processors with the budget Intel H61 Express chipset, while others use the newer and more capable B75 Express or Z77 Express chipsets. The choice of chipset will determine the features of your mainboard.

Although additional capabilities can be incorporated by the mainboard manufacturer, an H61-based system is unlikely to support 6Gbps SATA and may come without USB 3.0. Both these features come built-in on B75 Express and Z77 Express systems. The latter will also support processor overclocking, Raid and Intel Smart Response Technology, which can accelerate hard drives by using a small SSD as a cache.

Windows 8 certification

Check for Windows 8 certification if you're planning on upgrading the PC. Some models are already proudly displaying certification documents online. More products are being certified all the time (tinyurl.com/99wanpp), but non-certified hardware may also work.

In some cases, the version of the motherboard that has been certified is newer than the model we've received in our review PCs. This means the examples we've seen haven't passed certification, despite offering in essence the same specification.

If you want to be absolutely sure, insist on getting the specific model listed online.



have at least 8GB of memory.

If you want a PC for watching films and video, listening to music and chatting with friends, a decent speaker set is essential.

For larger rooms or simply a bigger sound, a 2.1 stereo set that incorporates a separate bass speaker or 'subwoofer' will perform better than a cheap 5.1 setup. (Note that the '5' refers to the number of speakers, while the '.1' refers to the subwoofer.)

Screen quality is crucial. Look for in-plane switching (IPS) panels where available, which offer better colour fidelity and wider viewing angles than budget twisted-nematic (TN) monitors. These displays are seldom offered

> in family systems, but are well worth seeking out especially if you're a digital photographer. Chillblast's Fusion Orb is our first charting family PC to come with such a display as standard.

A good screen with decent viewing angles becomes crucial when two or more people are viewing the screen at the same time. Consider a 24in full-HD monitor rather than a get-you-by 21.5in model, especially if you'll be using the PC to watch DVDs or video. Blu-ray drives are finally a more affordable

spoiled by a noisy PC. Sound-dampened cases can cut down on the noise produced by fans and drives. Good-quality CPU coolers can also help. Quiet PC specialises in such systems and has delivered the quietest system in this round-up.

Beginners may find the automated setup process of PCs from larger manufacturers useful. This can help you configure your machine and get online. The down side to this hand-holding gesture can be a lot of unwanted preinstalled software that can slow down your PC. Many UK vendors bundle the bare minimum of extra software - usually free open-source or obsolete versions of commercial programs.

Built-in wireless networking is useful if the PC won't be positioned next to your router, as are wireless keyboards and mice that remove unsightly cable clutter from the desk. The quality of these peripherals can often be overlooked but, as the primary interface between you and the PC, it pays to get decent, ergonomic components.

As a family PC, the system may be needed as a communications hub for Skypeing friends and relatives. To this end, a webcam is an essential asset.

Don't forget to check the warranty terms, which vary greatly between PC vendors. Some offer a two- or even three-year warranty, but beware of small print that states a parts- or labour-only guarantee. You may also be asked to pay to return the faulty product you've been sold.



ARBICO 15357 EXCEL

£799 inc VAT • arbico.co.uk • tinyurl.com/9545c4u

With excellent performance, up-to-date components and a tidy, compact case, Arbico's i5357 eXcel will be a useful home or office PC.

The eXcel is sold with a 24in monitor, a Blu-ray drive and a pair of stereo speakers, but no bass-boosting subwoofer.

The Arbico was supplied and tested running Windows 7, although its motherboard is Windows 8-certified. Its Intel B75 Express chipset offers native support for SATA 6Gbps and USB 3.0 connections.

Powered by a 3.4GHz Intel Core i5-3750 processor, and with a 120GB OCZ Agility SSD speeding up application load times, the Arbico scored an impressive 176 points in our WorldBench 6 speed test. Only the systems from Chillblast and Quiet PC scored higher in this benchmark, both of which take the overclockable 'K' version of the Core i5 CPU. The Chillblast also doubles up on its RAM helpings.

Gaming and multimedia performance is enhanced by an Asus AMD Radeon HD 7770 graphics card, which delivers sufficiently fast framerates that you can enjoy the latest games without turning down the quality settings. If gaming isn't your thing then you could forego this card, although we'd then recommend also upgrading to the Core i5-3750K, which offers faster integrated graphics.

Our CyberLink MediaEspresso conversion test completed in a fast 5 minutes 23 seconds. If you'll be doing a lot of video conversion, the Virtu function built into the motherboard will further speed up the process. Virtu uses the graphics processor integrated to the CPU, so the K-suffixed version would be more useful in this regard, too.



The Arbico is one of the most expensive machines in our group. Meanwhile, CCL's Elite Raven costs £130 less, and the Chillblast Fusion Orb also offers better value, with Wi-Fi, a card reader and a webcam all thrown in at the same £799 price.

VERDICT: This decent PC offers good performance and a tidy case. Its motherboard is Windows 8-compatible, and Arbico also throws in a Blu-ray drive. It comes without Wi-Fi and a subwoofer, however.

CCL ELITE RAVEN

£669 inc VAT • cclonline.com • tinyurl.com/9007az9

At £669, CCL's Elite Raven undercuts its rivals in our group test by as much as £130. Despite its low cost, its 3.1GHz Intel Core i5-3450 quad-core processor enables the CCL to turn in a decent performance. The Elite Raven's 161-point WorldBench 6 score is evidence of more than adequate processing power for family use.

CCL has also seen fit to include a dedicated AMD Radeon HD 7770 graphics card, which enables gaming graphics almost as fast as those that can be had from the most expensive PCs in this round-up. The Raven managed 147- and 102fps in 720p Crysis at the game's Low and Medium detail settings respectively.

There's no room in the budget for an SSD, and you won't find extras such as Wi-Fi or a webcam, but you do get a 24in monitor and a Blu-ray drive. For around £25 you can also add the Logitech S220 external speakers supplied with competing systems here.

The Gigabyte GA-H61MA-D2V (v2.0) motherboard uses Intel's H61 Express chipset. This lacks some features of newer chipsets, such as SATA 6Gbps, but Gigabyte has added support for USB 3.0 and PCI Express 3.0. The result is a perfectly capable PC at a lower cost. Although this version of the motherboard hasn't received Windows 8 certification, hardware revision v2.1 of the board, which has an identical specification, is Windows 8-compatible.

If space is tight, CCL's compact system case (the smallest of the group) may prove to be an attractive option. It isn't the most impressive, however. The case doesn't offer any cable management,



although CCL has neatly arranged the meshed cables of the 450W XFX power supply using cable ties.

VERDICT: The CCL Elite Raven is the least expensive system in our group test - for good reason: adding the power, speakers, Wi-Fi and SSD necessary for it to match the specification of its rivals would bring its price into line with the competition. If you don't need these features, the CCL is a great-value system in a compact case.

CHILLBLAST FUSION ORB

£799 inc VAT · chillblast.com · tinyurl.com/8d6n6fu

Chillblast's Fusion Orb delivers the best performance and peripherals in this round-up. It may also sit at the top end of our price range, but it offers significantly better value than other £799 machines.

Like Eclipse and Quiet PC, Chillblast has plumped for a 3.4GHz Intel Core i5-3570K processor. This is the overclockable version of the chip, although the Orb's Intel B75 chipset doesn't support this feature. It's still useful for its faster integrated graphics, of course.

The Fusion Orb achieved a very high 193-point score in our WorldBench 6 speed test. In part due to its processor, the Chillblast's speedy response in our benchmark can also be attributed to a 120GB OCZ Agility 3 SSD. The Orb is the only system here to be fitted with 16GB of fast DDR3 1,600MHz system RAM, too.

Chillblast has selected an AMD Radeon HD 6850 graphics card, which is an older model than the Radeon HD 7770 featured in most other systems here. It's also from a higher performance tier, though, and the two factors in essence cancel each other out; the HD 6850 and HD 7770 deliver roughly the same level of performance.

The supplied 24in liyama screen is a standout feature. It uses IPS technology to deliver vastly superior colour reproduction and viewing angles than any other display in the group. The Chillblast is thus very well suited to photo- and video editing.

The Fusion Orb comes with a handy card reader and a webcam, plus Wi-Fi connectivity via an external USB adaptor. A Blu-ray drive and set of Logitech speakers with subwoofer complete the package.



The Chillblast Vantage system case isn't particularly stylish, but it features cable management and tool-free drive bays.

VERDICT: One of the most expensive systems in our round-up, but an excellent performer, Chillblast's Fusion Orb delivers plenty of performance for Windows and games. It's supplied with a very good IPS monitor, a card reader, a webcam and Wi-Fi, making it well worth the £799 asking price.

CYBERPOWER ULTRA SCYLLA SE

£699 inc VAT • cyberpowersystem.com • tinyurl.com/c7juv7r

The Ultra Scylla SE is the only AMD-based PC in our group test. CyberPower has opted for AMD's quad-core 4.2GHz FX-4170 CPU and, although it has by far the fastest clock speed, it costs almost 50 percent less than an Intel Core i5-3570K.

Thankfully, it offers considerably more than 50 percent of the Intel chip's performance. With 132 points scored in our WorldBench 6 test, the Ultra Scylla SE falls some way behind the Intel competition, but it's still powerful enough to be used as a decent family PC.

An AMD Radeon HD 7770 graphics card is included, which is the same model used by many of the Intel-based systems. Unfortunately, gaming performance is often held back by the slower processor, which resulted in around 25 percent slower framerates in Crysis.

Keep in mind that this PC costs around £100 less than some of its rivals, yet it includes a 24in LCD monitor, a set of Logitech S220 speakers and a subwoofer, a built-in card reader, a webcam and wireless networking. You also get a Blu-ray reader as standard and a three-year labour warranty. So, if you don't need the extra performance that an Intel processor can provide, the Ultra Scylla SE provides a great all-round package at a lower cost.

The black Cooler Master Elite 430 system case houses an Asus M5A78L-M motherboard, which offers a pair of USB 3.0 and four USB 2.0 ports, but there's little room for expansion other than a pair of empty memory slots. The latter will allow you to double the system RAM allocation to 16GB.



Like most family PCs, the Ultra Scylla SE has a 1TB hard drive, but no SSD. Wi-Fi support is provided by a small card plugged into the motherboard, which is neater than Chillblast's USB solution and allows for a decent-size antenna to be fitted.

VERDICT: If you would prefer a strong set of features and peripherals to raw performance, the Scylla could be the PC for you. It's slower than the competition, but ticks all other boxes and costs £100 less.





ULTIMATE MONITOR

for iPod®/iPhone®-Fans

The AOC myStage monitor is an intelligent display providing the Apple® fan community with the ability to listen to music or view their pictures, videos and YouTube content from numerous iPhone and iPod devices on a stylish 23" (58.5 cm) monitor, with or without the need for a PC. Connect a PC to synchronise music, downloads and office applications or simply work on your PC applications and listen to great music through the powerful 5 W in-built speakers. A complete multimedia solution for Apple users.



Easy accessible menu/buttons



Stylish design with 1.29 cm profile



Dock your iPhone/ iPod directly into the socket

Monitor specification: e2343Fi, 23" LED backlight monitor, 50,000,000:1 contrast ratio, 5 ms response time Connections: VGA, HDMI connection, audio input, audio output, USB 2.0, iPhone docking station

ECLIPSE MATRIX i5357r777

£779 inc VAT • eclipsecomputers.com • tinyurl.com/chw3tmz

With its Matrix PC, Eclipse has managed to shave off £20 from the price of the most expensive systems here, while offering almost identical core components. Both a 3.4GHz Intel Core i5-3570K CPU and an AMD Radeon HD 7770 card graphics card are found inside.

Eclipse has selected an Asus P8Z77-V LX motherboard that features the enthusiast-friendly Intel Z77 Express chipset. This allows overclocking of the Core i5-3570K processor and supports using an SSD (not supplied) as a cache. There's room for an additional two sticks of RAM, and plenty of empty expansion slots and 6Gbps SATA ports. It provides four USB 3.0 and 10 USB 2.0 ports, although two USB 3.0s are on an internal connector. This is also the only motherboard in this group to be Windows 8-certified.

The EZCool HA-900B system case is well-built, but designed with gamers - not families - in mind. The clear side panel is unnecessary.

The lack of an SSD is one reason behind the Matrix's slightly slower performance in WorldBench 6 when compared to the similar competition. Its 174-point score is well behind that of the Chillblast and Quiet PC systems, which both feature an SSD.

A 23.6in HKC monitor is included, along with a Blu-ray drive, a pair of Logitech S220 speakers and a subwoofer. However, there's no webcam, and no Wi-Fi dongle either.



Only system tinkerers who have eyes on the Z77 chipset or expansion potential would choose the Eclipse over the two £799 PCs.

VERDICT: The Matrix shaves £20 off the price of the most expensive systems, but lacks many desirable features and falls short on performance. Its Windows 8-certified motherboard is superior, however, albeit better aimed at enthusiasts than families.

	ARBICO £799 inc VAT	CCL £669 inc VAT	CHILLBLAST £799 inc VAT PC ADVISOR BEST BUY
Model name	i5357 eXcel	Elite Raven	Fusion Orb
Processor	3.4GHz Intel Core i5-3570	3.1GHz Intel Core i5-3450	3.4GHz Intel Core i5-3570K
Monitor	23.6in AOC (1920x1080, 0.27mm)	23.6in Acer (1920x1080, 0.27mm)	23.6in liyama (1920x1080, 0.26mm, IPS)
Memory	8GB DDR3 1,600MHz	8GB DDR3 1,333MHz	16GB DDR3 1,600MHz
Storage	1TB HDD + 120GB OCZ SSD	1TB HDD	1TB HDD + 120GB OCZ SSD
Power supply	400W Xigmatek	450W XFX	700W Chillblast
Motherboard	Asus P8B75-M LX	Gigabyte GA-H61MA-D2V (v2.1 Windows 8-certified)	Asus P8B75-M LX
CPU cooler	Standard Intel cooler	Standard Intel cooler	Standard Intel cooler
USB	4x USB 3.0, 8x USB 2.0	2x USB 3.0, 6x USB 2.0	3x USB 3.0, 8x USB 2.0
Graphics	Asus AMD Radeon HD 7770, 1GB	Gigabyte AMD Radeon HD 7770, 1GB	XFX AMD Radeon HD 6850, 1GB
Sound, speakers	Onboard, 2x Logitech S120	Onboard, none	Onboard, 2x Logitech S220
Optical drive	Sony Blu-ray/DVD combo drive	Lite-On Blu-ray/DVD combo drive	Samsung Blu-ray/DVD combo drive
Operating system	Windows 7 Home Premium 64bit	Windows 7 Home Premium 64bit	Windows 7 Home Premium 64bit
Bundled software	None	Microsoft Office SE, free game	CyberLink software, free utilities
Case	CIT Templar	Not specified	Chillblast Vantage
Keyboard and mouse	Logitech MK260 wireless	Logitech MK120 wireless	Logitech MK260 wireless
Extra features	None	None	Card reader, webcam, USB Wi-Fi adaptor
Warranty	1-year collect-and-return (1 year parts, 2 years labour)	2-year return-to-base	2-year collect-and-return
WorldBench 6 score	176	161	193
Games score (fps) ¹	153/112	147/102	157/109
MediaEspresso time	5 mins 23 secs	8 mins 30 secs	11 mins 19 secs
Power consumption (idle/max)	50W/123W	39/85W	67/119W

Tested in Crysis 720p Low/Medium detail

QUIET PC SERENITY Z77 VALUE

£749 inc VAT - quietpc.com - tinyurl.com/cpwg5nk

If your family PC is likely to be switched on for most of the day as each person takes their turn, it'll pay to have one that doesn't distract other family members with whirring fans and chattering hard drives. To this end, Quiet PC has fitted a 120GB KingSpec SSD in place of a hard drive in its Serenity Z77 - it's quiet, but also low on capacity.

It's almost inevitable that you'll add a hard disk to this setup.

Quiet PC also sells quiet HDDs and a selection of noise-reducing enclosures - if only one had been fitted to this machine.

Intel's standard processor cooler has also been replaced with a much quieter version in the form of the Gelid Tranquillo. The whole system is enclosed in a rather impressive, if somewhat overblown, Nexus Prominent R case, which features built-in soundproofing materials. It also features a top-mounted SATA drive dock.

Like Eclipse, Quiet PC has plumped for an enthusiast-level motherboard that uses the Intel Z77 Express chipset. It supports up to six USB 3.0 connections and a pair of SATA 6Gbps ports.

We don't expect you to encounter problems running Windows 8, but only revision 1.1 of this board has been certified by Microsoft.

With a WorldBench 6 score of 182 points, application performance is excellent. Gaming performance suffers, however, as the system relies on the chip's integrated GPU for 3D graphics.



Note that this PC lacks a monitor, dedicated graphics card, hard drive, Blu-ray reader, webcam, speaker set and Wi-Fi.

VERDICT: This is a well-constructed and quiet system. It performs very well, but lacks features – some of which are essential for a family PC. For this reason the £749 price may seem reasonable, but it should be thought of only as a starting point.

CYBERPOWER £699 inc VAT CYBERPOWER RECOMMENDED	ECLIPSE £779 inc VAT	QUIET PC £749 inc VAT
Ultra Scylla SE	Matrix i5357r777	Serenity Z77 Value
4.2GHz AMD FX-4170	3.4GHz Intel Core i5-3570K	3.4GHz Intel Core i5-3570K
23.6in Edge 10 (1920x1080, 0.27mm)	23.6in HKC (1920x1080, 0.27mm)	None
8GB DDR3	8GB DDR3 1,333MHz	8GB DDR3 1,333MHz
1TB HDD	1TB HDD	120GB KingSpec SSD
500W Cooler Master	Not specified	450W Zalman
Asus M5A78L-M	Asus P8Z77-V LX (Windows 8-certified)	Gigabyte GA-Z77-D3H (v1.1 Windows 8-certified)
Standard AMD cooler	Standard Intel cooler	Gelid Tranquillo
2x USB 3.0, 4x USB 2.0	2x USB 3.0, 6x USB 2.0	5x USB 3.0, 6x USB 2.0
MSI AMD Radeon HD 7770, 1GB	VTX AMD Radeon HD 7770, 1GB	Integrated Intel HD Graphics 4000
Onboard, 2x Logitech S220	Onboard, 2x Logitech S220	Onboard, none
Lite-On Blu-ray/DVD combo drive	Lite-On Blu-ray/DVD combo drive	Sony DVD writer
Windows 7 Home Premium 64bit	Windows 7 Home Premium 64bit	Windows 7 Home Premium 64bit
Microsoft Office SE	None	None
Cooler Master Elite 430	EZCool HA900B	Nexus Prominent R
Logitech MK230 wireless	Microsoft Optical Desktop 400 wireless	Microsoft Wired Desktop 600
Card reader, webcam, Wi-Fi	None	Soundproofing, USB 3.0/SATA HDD dock
3-year return-to-base (1 year parts, 3 years labour)	1-year return-to-base	2-year collect-and-return
132 (estimated)	174	182
114/76	152/109	49/31
13 mins 3 secs	7 mins 49 secs	1 min 38 secs
86/167W	55/98W	29/82W

Conclusion

Ranging in price from £669 to £799, the six family PCs in our group test each offer unique benefits and specifications.

We're pleased to see home-friendly features such as memory-card readers and webcams included in some PCs, as well as wireless keyboards with multimedia controls in the form of Logitech's MK260.

Several machines here also support 802.11n wireless networking, allowing you to site them away from the router and cut down on cable clutter. It's simple to add a USB wireless adaptor (Chillblast's PC comes with one in the box), but internal Wi-Fi cards are neater and don't get snapped off or lost.

Many PCs come with bundled software. Enthusiasts tend to find this so-called 'crapware' infuriating, but many a home user will value a suite of lifestyle-enhancing applications and pre-configured antivirus software. The combination of Nero and CyberLink utilities is a good starting point; both are optionally included by Chillblast.

For a family PC that will potentially be placed in a living room, we had hoped to find smart, understated designs. We can forgive budget cases for looking less than beautiful, but most PC builders remain out of touch with their prospective customers, supplying systems that closely resemble battle-ready

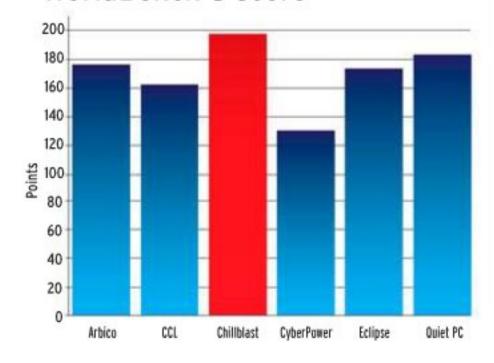
gaming rigs. We'll leave it to you to decide if any would fit in with your home décor.

If you're not thinking of upgrading your PC internally, then you might like to instead consider an all-in-one system (see page 132).

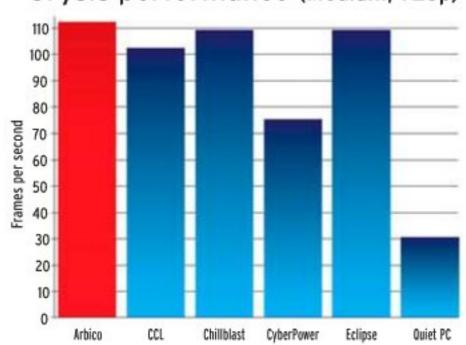
Chillblast's £799 Fusion Orb offers very good value, with stellar performance, top-notch components, useful peripherals and an IPS display. The Chillblast is also covered by a two-year collect-and-return warranty for peace of mind.

If you're more interested in getting good features and a useful box of peripherals than sheer speed, CyberPower's less expensive Ultra Scylla SE may be all you need.

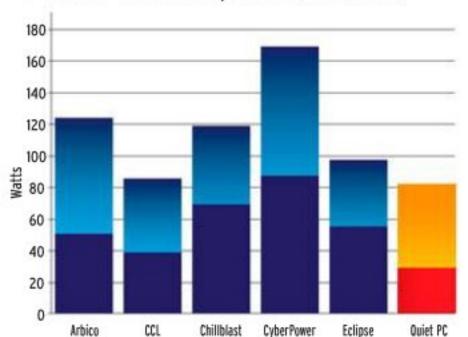
WorldBench 6 score



Crysis performance (Medium, 720p)



Power consumption (idle/max)



How we test

Application performance

Core system performance is measured using the WorldBench 6 real-world benchmark. This customised test suite runs actual Windows applications with a real-world workload, mimicking how a PC is used in day-to-day life.

The workload includes tasks such as editing Microsoft Word documents and Photoshop images, compressing files, browsing web pages and encoding video. Select tasks are then run simultaneously to form an additional test of the PC's multitasking capabilities. The results are then combined to produce a numerical score relative to a baseline PC.

The baseline configuration is a Vista PC running a 2.4GHz Intel Core 2 Duo E6600 processor, 2GB of DDR2 RAM, an nVidia GeForce 7900 GS graphics card, and two WD Caviar WD3200KS 320GB drives in a striped Raid O array. This PC scores 100 points in WorldBench 6.

Note that none of AMD's 'Bulldozer' processors has been able to complete the Nero 7.0 portion of the benchmark; scoring for these systems incorporates an estimated result for this sub-test.

Transcoding performance

Because you'll often be working with more than one video format, we set each PC the task of converting a batch of 1080p Mpeg4 video clips for use on the iPad and recorded how long it took to complete. We used CyberLink's MediaEspresso software.

This software is able to make use of hardware-accelerated decoding and encoding built into graphic cards and CPUs with integrated graphics-processing capabilities. These techniques can often shorten conversion times by a factor of 10.

Multiple CPU threads are also exploited, allowing quad- and six-core CPUs to shine when compared to dual-core versions.

Gaming performance

A typical family PC is likely to be used to play a game or two in its lifetime, but top-spec graphics cards tend to be outside the budget of such systems.

However, you'll be able to enjoy most modern games when run at slightly lower resolutions and quality settings. Indeed, we use the intensive game Crysis to test the graphics capabilities of each PC, configured at 720p, 'Low' and 'Medium' quality settings.

Overclocking

We allow overclocked processors only in our dedicated gaming PC reviews. All other components are run at stock speeds, with the exception of factory-overclocked graphics cards. We do, however, allow underclocking to reduce power consumption.

Subjective assessment

We pay close attention to the physical characteristics of each PC, its noise output and its build quality, delving inside the case and taking note of the cabling and airflow. Good-quality peripherals are important, and where they are supplied we note the ergonomics of the keyboard and mouse. We like PCs that are easy to set up and don't require any additional purchases. We're not so keen on gotchas such as low-capacity SSDs, which will fill up easily and cause file-management headaches.

Support

Warranty terms can impact our scoring. The longer the better, but we also look at the terms and conditions - specifically, whether faulty systems must be returned at your own cost and if parts and labour are covered.

HDD performance reaches all-time high, 600 IOPS and 200MB/s!

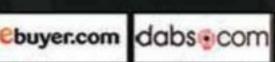




Available at:







dabs.com



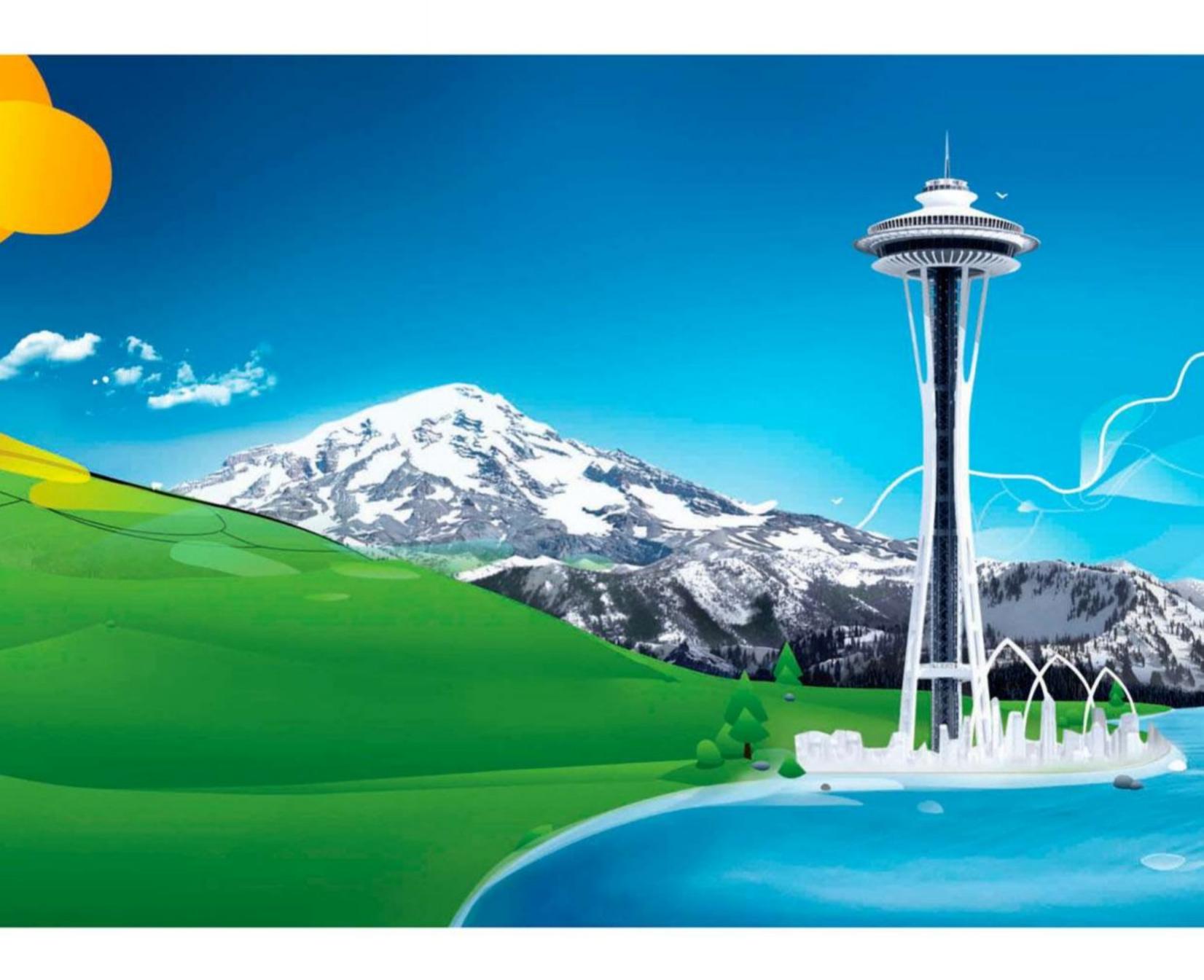
Win dows 8

in-depth

Windows 8 is here, and it represents the biggest change since Windows 95. Jim Martin takes an in-depth look at the final version

indows 8 launches on 26 October, when it will become the operating system preinstalled on the majority of new PCs and laptops. A version of Windows 8 known as RT will also be available on tablets, starting with Microsoft's own Surface; at roughly the same time, Windows Phone 8 will begin to appear on smartphones. Over the following pages, we cover all things Windows 8 - except Windows Phone 8, which is not yet available to test.





All change, please

A radical change

You're probably familiar with at least one of the flavours of Windows in use on the majority of PCs today: XP, Vista and Windows 7. Improvements have been made over the years, but all versions since Windows 95 are fundamentally the same. Now there are two distinct new operating systems: Windows 8 (and Windows 8 Pro) for PCs and laptops; and Windows RT for ARM-powered tablets.

Windows 8 represents a radical change. The traditional desktop has been relegated to the sidelines to make way for a new 'Modern' (previously 'Metro') user interface. This interface is touch-optimised, making it equally usable via finger- or keyboard-and-mouse input. However, in this environment, only specially coded apps are compatible.

Windows 8 or 'Modern' apps are downloaded via the new Windows
Store, or from third-party developer websites. The Windows Store is similar
to Apple's App Store and Google Play, with free and low-cost software
available for download, but it will be comparatively barren come launch day.
This is expected to change as more and more people upgrade or buy new
PCs preinstalled with Windows 8, or tablets running Windows RT.

You will still be able to run legacy programs in the Classic desktop on Windows 8 PCs and laptops, but not on tablets running Windows RT.

Upgrading to Windows 8

You don't have a buy a new laptop or PC to get your hands on Windows 8. As with previous versions, you can upgrade an existing Windows machine to run the new operating system, although there are limits to what files, programs and settings can be brought along for the ride.

Those running Windows XP will be able to transfer only their files, while Vista users can also transfer their settings. Only Windows 7 users will be able to continue using their installed programs, with any that are not compatible uninstalled prior to the upgrade. The installer will tell you what action needs to be taken.







Microsoft's Surface tablet will launch on 26 October and will run the RT version of Windows 8

Windows 8 vs Windows RT

Let's clear up one important point at the start:
Windows 8 is written for x86 processors, such as the
Intel and AMD variants found inside your existing
PC or laptop; Windows RT is written for the ARM
processors found inside your tablet or smartphone.
Except that it won't actually run on your smartphone
for that, you'll need Windows Phone 8. Windows 8
and RT look the same, and use the same gestures,
but there are some subtle differences.

One is that you can't buy Windows RT, in the same way you can't buy Apple's iOS operating system for the iPad. It comes preinstalled on a tablet.

Windows RT is compatible with apps downloaded from the Windows Store, as is Windows 8. However, RT comes with Microsoft Office preinstalled; Windows 8 does not.

Windows RT doesn't include the traditional Windows desktop required to run legacy programs; Windows 8 does. Both the standard version of Windows 8 and RT also lack some of the features found in Windows 8 Pro: there's no Windows Media Player, nor BitLocker encryption, no domain support and, although there's Remote Desktop, it works only as a client, so you can't remotely connect to a Windows RT tablet. For more, see page 91.

Windows RT includes the Internet Explorer 10.0 web browser, the Office 2013 productivity suite, plus apps for Mail, Calendar, Maps, Photos, Music, Videos, Weather, People, News, Travel, Finance and SkyDrive. There's also Windows Defender, Exchange ActiveSync and support for virtual private networks (VPNs).

Microsoft has confirmed that Internet Explorer 10.0 in RT will support Flash, which is used on many websites and for a lot of internet video. Flash is also supported in the desktop version of Windows 8.

Modern user interface



Windows 8 lock screen In Windows 8 your computer boots straight to the lock screen, the same screen you'll see on a Windows RT tablet. To remove the lock screen you simply swipe upwards on a touchscreen, or click or press a key on your keyboard. This will reveal the user accounts configured on the device, just as

The lock screen shows the time and date, plus it can include detailed information from an app of your choosing, such as Weather or Mail. Many third-party apps, such as Twitter, include this functionality.

you would find in previous versions.

Windows 8 Start screen

The Start menu of old has gone, even on the Classic desktop, now replaced with the Modern user interface. This is best thought of as a full-screen Start menu. Don't be put off: it takes only a few minutes to gain your bearings and figure out where things are and how to accomplish tasks.

The Start screen is well designed and conveys far more information than might be gleaned from a first glance. Some of its 'tiles' display live information, allowing you to view a weather forecast without opening the Weather app, or read the headlines without launching the browser, for example.

You can rearrange the tiles by tapping and then dragging them into position. Surrounding apps automatically realign themselves, and some can be shrunk down or enlarged.

A new tile is created for each app you install; you can also add tiles as shortcuts to programs already installed on the machine, including legacy software. As the screen starts to fill up you'll need to scroll to the right to view the full listing, or pinch to zoom out and find the app you need.

If you don't have a touchscreen PC, hold down Ctrl and roll your mouse's scrollwheel to zoom in and out; the same can be accomplished on a laptop with Ctrl, + or Ctrl, -.

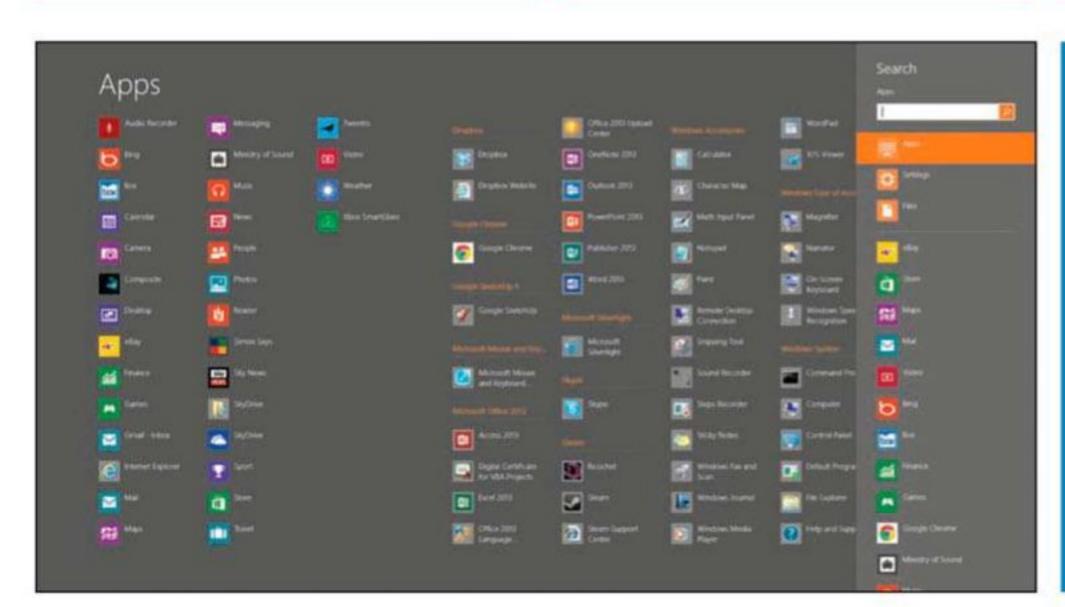
In the zoomed-out view, clicking on a group of tiles lets you select and move it to a new position. Right-clicking it brings up the option to name the group. In the zoomed-in view, dragging a tile between groups creates a new group.

When using the interface with a standard mouse, the scrollwheel will default to horizontal scrolling until you click on a vertical pane of information, such as a list of emails or a web page. This enables



you to get around the Modern interface without too much hassle, and without needing to buy new hardware, such as Microsoft's Touch Mouse (see page 90).

There's no getting away from the fact that, as Microsoft freely admits, touch is a first-class citizen in Windows 8. The OS isn't as quick or pleasant to use with a mouse and keyboard. Keyboard shortcuts, such as those explained on the next page, are a saving grace.



Windows 8 Search

For a list of all installed apps on your machine, swipe up from the bottom or right-click to bring up the bottom options bar, then choose All apps.

A neat shortcut, if you know what you're looking for, is to simply start typing its name on the Start screen. This opens the search box, and you can filter the results by type: Apps, Settings or Files.

You can apply a search to a particular app (Internet Explorer, for example) by clicking or tapping on the app in the search box.



Modern user interface



Come Note 2013 Excel 2013 Excel 2013 Flower Point 2013 Coogle Chrome Start Access 2013 StyCeire StyCeire Search Microsoft Messes and Krybbaris. Dropton Share Dropton Start Devices Settings

Multiple windows, Modern user interface-style

Tapping or clicking on an app opens it in full-screen mode. Drag down from the top, then left or right, to resize the app to occupy a small column at either side. The remainder of the screen is then left for a second app. Flip apps between these positions by grabbing the black bar separating them and dragging it to the left or right.

Working in this way feels more restrictive than it does with the traditional desktop, which lets you have open as many windows as you like, and in any position. On a Windows 8 tablet, however, the ability to simultaneously view two apps is uncharted territory.

You could, for example, leave your Twitter or Mail app running in a small column out the way, while you get on with whatever task you're supposed to be completing in the main workspace. This way you'll see new tweets or emails as they appear. Windows 8 notifications also fulfil this need, but are shown onscreen only for a moment.

There are various ways of switching between apps. The easiest is to use the Windows, Tab shortcut to bring up a vertical apps list. To choose an app that's running on the desktop, instead use Alt, Tab and the cursor keys.

On a touchscreen, drag in from the left and then back to bring up the apps list. If you're using a mouse, point the cursor at the top- or bottom-left corner of the screen, then drag up or down to view the list.

Keyboard shortcuts for Windows 8

Alt, F4: Closes the current app. You can also use your mouse to click at the top of an app and drag it to the bottom of the screen

Windows, C: Opens Charms bar

Windows, **D**: Reveals traditional desktop; press again to minimise all desktop Windows

Windows, H: Share Charm

Windows, I: Settings Charm

Windows, L: Locks computer

Windows, Q: Search Charm. The Search Charm is set to whichever app you're currently using. You can quickly switch to a file search with Windows, F, or settings search with Windows, W

Windows, X: Opens admin menu

Windows, **Z**: Displays the app bar and gives contextual options in individual apps

Windows 8 Charms bar

The Charms bar is a new feature in Windows 8. It appears when you swipe your finger in from the right edge of the screen, or point the mouse cursor to the top- or bottom-right corner of the screen.

From the top, you'll find Charms for Search, Share, Start, Devices and Settings.

Search is a replacement for the search box in Windows 7 and Vista, but a more capable version.

The Share Charm allows you to share items, with the available options dependent on the current app. Extra sharing options will appear when you install apps that can share content, such as Twitter.

The Start Charm returns you to the Start screen if you're in another app, or switches to the most recent app if you're already there.

Click or tap the Devices Charm to show relevant connected devices. Printers, speakers, screens and network devices will be shown in a list. You can click on one to change its settings, or use any of its capabilities.

Finally, the Settings Charm gives quick access to Wi-Fi settings, volume, screen brightness and notification options. It also provides a link to the new, streamlined control panel, simply named Settings. Clicking the Settings Charm will also show settings specific to the current app, so you might see common Help and About links for most apps, but an extra Accounts option for Mail, say.

Windows 8 performance

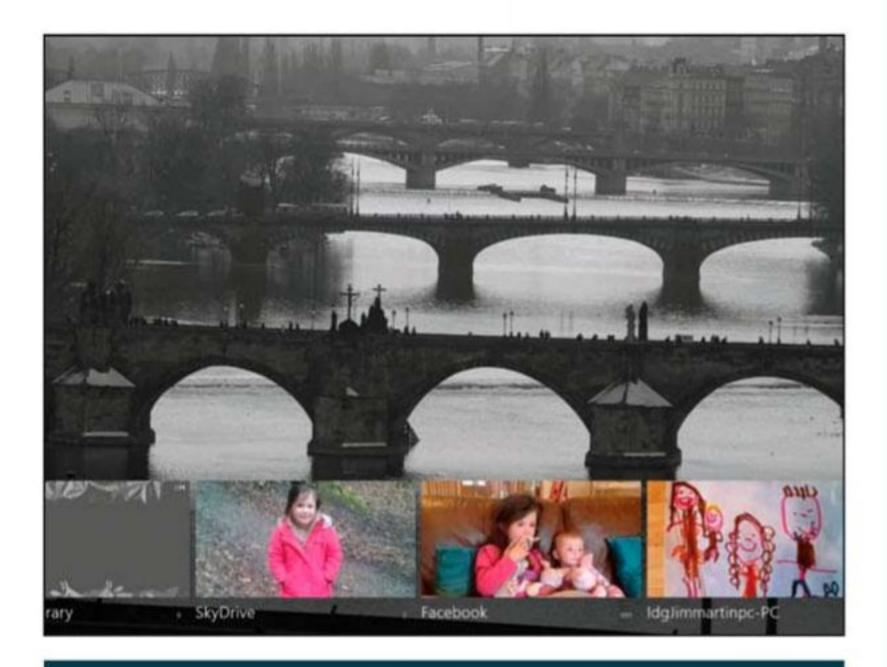
Web pages load noticeably quicker in Windows 8 than they do in any Windows 7 browser. In fact, compared with Windows 7 on the same hardware, Windows 8 is a faster OS in general. The interface is responsive, apps load quickly and, crucially, it's much faster to boot up and shut down.

On an old Sony Vaio with a Core 2 Duo processor and 3GB of RAM, Windows 8 boots in 21 seconds, and shuts down in 20 secs. That's a vast improvement on a recent and uncluttered install of Windows 7, which took 56- and 43 secs respectively.



Modern apps

Windows 8 comes with several preinstalled apps in three broad categories: Media, Social and Search. Most feel like proper, finished apps compared with the preview versions we saw a few months ago. However, there's clear room for improvement in some areas, and Microsoft is already providing regular updates



Windows 8 Media apps

Media apps in the preview versions of Windows 8 were simply examples of what the finished app would eventually look like. In the final version, they feel more like a shop front than a place to browse and play your own music and videos, not least because they're now Xbox-branded.

The Music, Video and Games apps are in essence the same app, albeit with different content. In Music and Video, your own local content is 'hidden' off-screen to the left, and the apps default to a selection of new or popular songs and videos in the Xbox store. You can preview music tracks, but there are currently no trailers for most video content.

For £9 per month - £1 less than Spotify Premium - you can subscribe to Xbox Music Pass (formerly Zune Music Pass), which lets you stream unlimited tracks to play on your computer, Windows Phone or Xbox.

The Photos app is largely unchanged from the beta versions, and lets you view your locally stored photos alongside pictures from online services such as SkyDrive, Facebook and Flickr.

You can set one of your photos to be the app background and the app's tile in the Start screen. The slideshow button on the main page plays random photos from all connected services, but you can click on one to display only local photos, for example.

The semantic zoom is supported in the Photos app, allowing you to zoom out to see smaller thumbnails or folders, and making it faster to browse a large library. You can also pinch-to-zoom on a thumbnail to view the photo in full-screen mode; pinch again to return to thumbnail view.

It's possible to import images from a USB device or removable memory card from within the Photos app, and share images via any installed app that supports photo sharing.

Videos you've uploaded to Facebook can also be viewed via the Photos app, but not the Videos app. Strangely, there are no options to connect to online video services in the Videos app, such as YouTube or Vimeo.

Windows 8 Search apps

Microsoft has given Bing a noticeable presence in Windows 8. It's the default search engine in Internet Explorer 10.0 (see next page), and there's a Bing app, plus Maps, Travel, Sport, News and Finance.

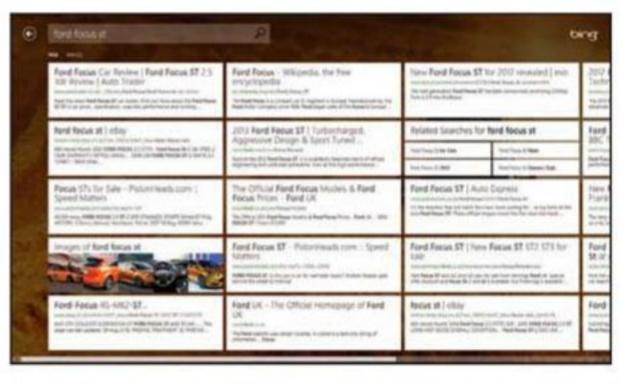
The Bing app is unlikely to be used too frequently, since it's almost a direct duplication of searching in Internet Explorer 10.0, but with a fancy-looking interface. Maps is a slick, but basic version of Bing maps online, but it works well on a big screen for exploring areas. It lacks the website's 45-degree Bird's Eye photography, though.

The Travel app delivers more eye candy, offering information and photos for a wide selection of popular destinations around the globe. It's hardly comprehensive, but it does provide nice panoramic photos and the ability to search for flights and hotels.

In the Consumer Preview of Windows 8, the Sport app was a rather US-centric affair; it's now UK-friendly and brings the same horizontal Modern user interface style to football, cricket, golf and F1 fans. Swipe down from the top of the screen to pick a sport. In certain sports, such as football, you can pick a specific team to follow. The feed with then bring you news, results and photos for that team.

News is a basic-looking app, but it lets you create a personalised news feed by adding sections on subjects in which you're interested. Rather than limiting you to a few categories, the app lets you type in your search term and gives you stories with those keywords. There are plenty of popular news sources to choose.

Finally, there's Finance, which lets you keep track of stocks and shares via a configurable watchlist, and get your fix of finance-related news. Another section provides up-to-the-minute exchange rates.





Modern apps

Windows 8 Social apps

Social apps include Mail, Calendar, Messaging and People, although Photos could arguably also be considered as a social app, given that it aggregates information from several online services. Fire up any of these apps for the first time and you'll be prompted to sign into services for which you may already have a login, such as Google, Gmail, Hotmail, LinkedIn, Twitter, Facebook and others.

Having configured these services, the apps quickly fill up with contact information, emails, calendar appointments and updates. Inevitably, there's crossover between some apps, particularly People and Messaging.

Messaging lets you add Windows Live Messenger and Facebook accounts, but when you create a new message the People app opens so you can see who's online and choose a contact. There's no list view of online contacts, such as that given in the full version of Live Messenger or Facebook. Plus, unlike in Live Messenger, you can send only text, not photos or files, and there's no support for video or voice chats. The Messaging app doesn't work with other IM clients for now, but that's sure to change in the future.

The People app feels more finished. You can link to Google, LinkedIn, Facebook, Twitter, Hotmail and Outlook accounts. If you've added all your accounts and find the app too crowded with contacts as a result, you'll have to use the web interface to remove a linked account.

Contacts from each service are automatically merged to prevent duplicates. At the left side are favourite contacts and a Social column, which has links to notifications and any new posts from your connected services.

The People app doesn't feature in the list of apps that can show notifications, meaning you have to open the app to see them. Notifications from other apps appear as a pop-up window at the top-right corner of your display.

Mail is a good example of what can be done with a Modern app. It's split into three columns with folders on the left (Inbox, Sent, Trash and so on), the list of emails in the middle, and the contents of a specific email on the right. At the bottom of the left column are the names of the accounts you've set up, so it's just a case of clicking on an account name to switch to it.

Beyond this, the Mail app offers little functionality. You can sort email only chronologically, and there's no way to flag or mark messages. Conversations aren't shown in threads either. We expect many people will prefer to continue using their webmail client for anything more complex than quickly sending or replying to an email.

One useful feature in Windows 8 is the ability to pin a folder (such as your Inbox) to the Start screen. This way, it's possible to create a shortcut to each email account and jump straight to it from the Start screen.

The Calendar app merges your connected accounts to display all your appointments together. Feeds are colour-coded, and you can turn them on or off as you like, as well as flip between one-day, two-day, weekly and monthly views.

The SkyDrive app provides a simple way to view, edit and download your online files. The app bar, which is visible when you swipe up from the bottom (or right-click), adds options to create a new folder, upload or delete files.





Internet Explorer 10.0

Internet Explorer 10.0 is unrecognisable from the previous version found in Windows 7. By default websites display in full-screen mode, with the address bar and tab thumbnails appearing only when you right-click or swipe in from the top or bottom edges of the screen.

This means you can see much more of a web page than before, but we don't understand why Microsoft has moved the combined search/address bar to the bottom of the screen. It seems an unnecessary break from familiarity, and the tabs could just have easily appeared at the bottom instead.

The browser retains the Flip Ahead feature, which tries to predict which link you'll choose and offers a shortcut.



Desktop interface

Classic and Modern desktops

All PCs and laptops running the standard and Pro versions of Windows 8 can display the traditional Windows desktop. Simply tap or click the tile at the bottom-left corner of the Start screen.

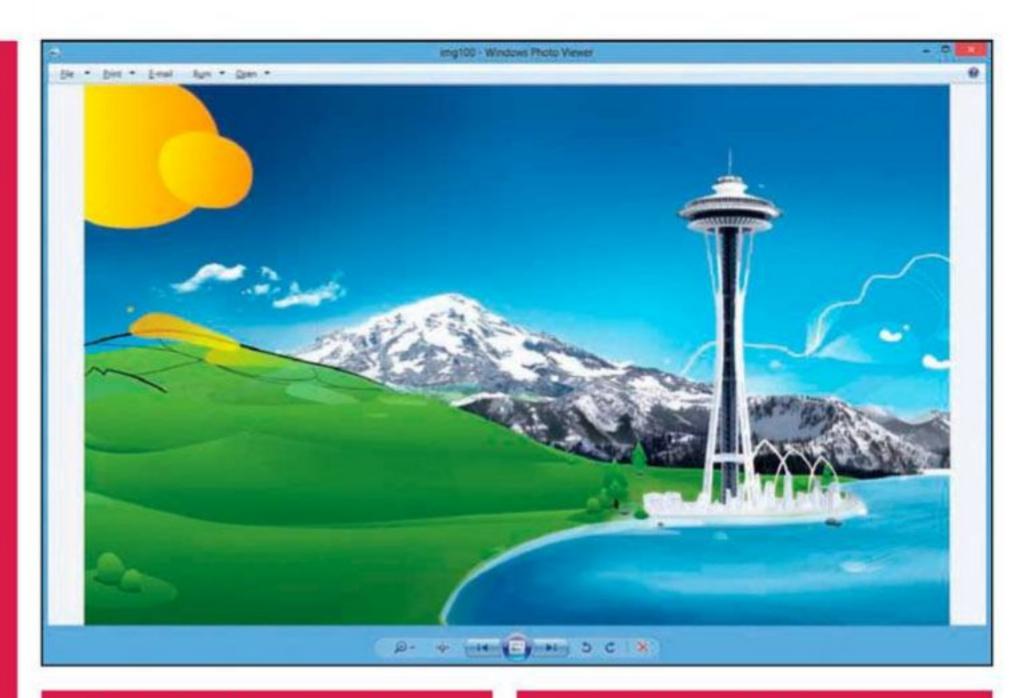
The traditional desktop can provide instant relief if you're struggling to get to grips with the Modern interface, although the absence of the old Start menu may cause some users to panic. Rest assured, you'll quickly get used to launching apps from the Start screen, or from shortcuts on the desktop.

Some elements of the Modern interface are accessible in the traditional desktop, such as the Charms bar and app list. This ensures a consistent look and feel throughout the operating system, and makes it easier to think of this traditional working environment as simply another app - one in which you can run legacy Windows programs.

Point your mouse cursor to the bottom-left corner of the screen (where the Start menu appeared in previous versions of Windows) and a thumbnail of the new Start screen will pop up. This is also accessible by pressing the Windows button on your keyboard.

Right-click the bottom-left corner or press Windows, X to bring up an admin menu. This provides quick access to many of the tools you would previously have found in the Start menu, including File Explorer, Run, Task Manager, Control Panel, Command Prompt and more.

When using Windows 8 on a laptop, also here is the Mobility Center, through which you can alter the screen brightness and power options.



Another way to access settings is via the Settings Charm. Here you'll find shortcuts to the Control Panel. Personalisation and PC Info.

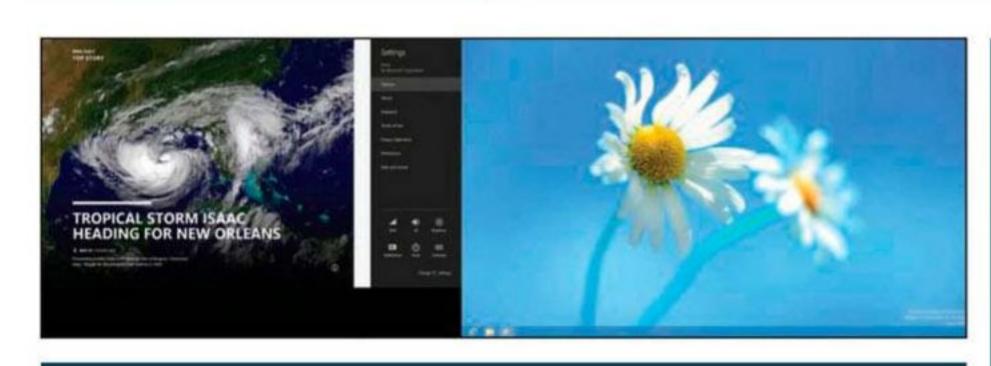
One change you'll notice is that Aero has gone. No more are the transparent frames around windows (only the taskbar retains some transparency), and the simplified square edges and removal of shadows from windows makes everything appear flat. There are a few inconsistencies, though, such as the Vista-style buttons on the Image Previewer (see screenshot above).

The Ribbon interface, which arrived in Office 2007, has been adopted by File Explorer, although it's hidden by default. You'll still see the File, View and other menus, but click on one and a Ribbon rather than a vertical menu will pop up.

The Ribbon is context-sensitive, so you'll be offered options appropriate to the types of files you're viewing. Click on the Pictures folder, for instance, and two new tabs appear: Library Tools and Picture Tools. The former is shown whenever you're looking at a folder that is part of a Library (Windows 7 introduced Libraries as a way of grouping folders of similar files).

Picture Tools offers buttons for rotating images, playing a slideshow of your photos, setting the currently selected image as your desktop background and a Play To menu, which lets you view the selected image on a mobile device.

In other ways, the desktop is identical to that found in Windows 7. Applications still have Jump Lists, which appear when you right-click the taskbar icon to see recent files, and to which you can pin specific files.



Multiple-monitor support

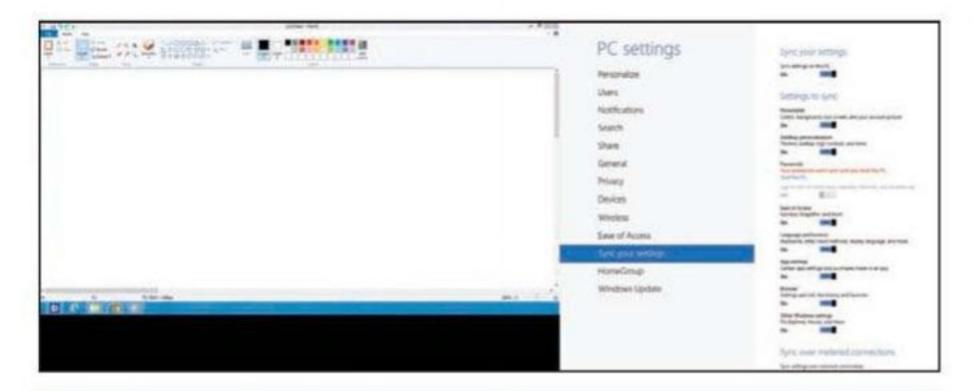
Like its predecessor, Windows 8 supports multiple monitors - but there are some differences. Although the clock and notification area appear only on your main monitor, programs pinned to the taskbar are shown on both.

All monitors have 'hot' corners, which means the Charms bar also appears on each screen. Tiny six-pixel traps stop the cursor simply moving across to the second monitor, but you need to have the pointer hard against the top or bottom of the screen to catch them.

You can configure multiple displays by right-clicking the desktop and choosing Screen resolution, or via the screen settings in the Devices Charm.

The Start screen and Modern apps use only one screen. When viewing the Start screen, for example, the second monitor shows only the traditional desktop.

Desktop interface



Switching between desktop and tablet

One of the best new features in Windows 8 is Sync your settings. This claims to allow you to log into another PC, laptop or tablet running Windows 8 and find an exact copy of your own Windows installation, which looks and behaves the same.

This isn't strictly true, of course. Move from a full-HD PC monitor to a tablet, for example, and the Start screen tiles will display in a different order. Oddly, tiles don't even retain their size, so it's not possible to locate an app by memorising its position.

You'll find Sync your settings in Windows 8's Settings. Here you can choose what is synched, from the Start screen background to passwords, app settings, browser history and more. It's possible to sync passwords only when you click 'Trust this PC', and then click the link in the confirmation email sent to you.

Apps themselves aren't synched, so even if the PC or tablet has the app installed in another user's account, it won't appear on your Start screen until you install it. When you install an app you've used elsewhere, your settings for it will be loaded.

You're allowed to install apps you've purchased on up to five computers, and you can log into the Store from five different computers.



No touchscreen? Use a touch mouse

Microsoft's Touch Mouse isn't new to Windows 8, and was designed to simplify using Windows 7. Its buttons form a sort of touchpad, and it supports three-finger gestures. We've reviewed it at tinyurl.com/9khb6ec.

Connect the Touch Mouse to a computer running Windows 8 and it can be used to show the Charms bar and flip between open apps. Other gestures reveal the app bars (the equivalent of swiping in from the top or bottom on a touchscreen), and zoom in and out wherever semantic zoom is supported.

All the Windows 7 gestures can be used in Windows 8, too. This means you can scroll and flick both horizontally and vertically to navigate around documents and web pages. You can also manage windows on the desktop, snapping them to the left or right, minimising and maximising them and hiding or showing all running programs.

Since there's no scrollwheel, there's no middle-click button, but you can assign new gestures to add this feature. It can take a while to get used to swiping instead of rolling a scrollwheel but, once you've mastered the gestures, you'll wonder how you lived without them. At around £70, it's considerably cheaper than a touchscreen.

Security and user accounts
Since Windows 8 connects to lots of
different online accounts, it's important
that you apply a strong password to
your user account. You can also create a
picture password, where you draw three
gestures onscreen or with your mouse.

These can be dots, lines or circles, and you can use your own photo. Setting a picture password means you don't have to enter a complicated password every time you switch on your computer or resume from standby.

Windows 8 is the most secure yet version of Windows. To sync passwords between Windows 8 devices, you must go through a two-step authentication process to 'trust' the computer.

Also, only the first account you create on a Windows 8 computer has administrator privileges. Only the administrator can create new users and install and remove programs. This is a sensible setup in most situations.

We found that some applications could still be installed by a standard user account, such as Google's Chrome web browser, but others, such as Skype, required the administrator password.

Windows 8 uses a new feature,
SmartScreen, to help ensure you don't
inadvertently install a program from the
internet, which includes malware. It does
this by checking the program's hash value
against a database. If a program looks
legitimate, but its hash value doesn't
match, you'll get a warning. Along with
Windows Defender, Microsoft's antivirus
app, it should decrease your chances of
installing viruses and other malware.

Any malware that does get through will have to contend with the fact that Windows 8 has better protection for its core files, and a new memorymanagement system that's more difficult to attack. Modern apps are sandboxed, too, which means they're isolated from other apps. They also have fewer privileges, gaining access only to your files and location, for example, when you grant permission.

Windows 8 is the first OS to use the secure boot feature on motherboards with UEFI to prevent rootkits from messing with your computer. It will also take advantage of Trusted Platform Modules, which can be used to verify your computer is trusted when making online transactions, for example.

Which version?

Things are simpler than they were with previous versions, with a choice of only Windows 8 and Windows 8 Pro for installation on a PC. Both offer Modern and traditional desktops, with slightly different features.

Windows 8

Windows 8 is the successor to Windows 7 Home Premium, and lacks Windows Media Player. Fortunately, Modern apps take up the slack.

You can connect to another PC using Remote Desktop (but you can't remotely connect to a Windows 8 system), and Storage Spaces let you combine several hard disks into a 'Storage Pool', which can have Raid-like redundancy for better file protection. There's built-in support for ISO and VHD images, too, meaning you can 'mount' them as virtual drives.

Windows 8 also has the option to switch not only the keyboard language, but also the Windows interface as well.

Windows 8 Pro

Windows 8 Pro is aimed at business users and enthusiasts, and is the successor to the Professional and Ultimate versions of Windows 7. It has all the features found in standard Windows 8, plus some extras.

With Pro you get the ability to connect remotely from another computer, join a domain and encrypt the contents of your disk with BitLocker, preventing someone from removing your hard drive and accessing its contents on another computer.

Strangely, Windows Media Player is an optional add-on for Windows 8 Pro, the pricing for which has yet to be confirmed.

For most people using a laptop or PC at home, the basic version of Windows 8 will suffice. However, computer enthusiasts who regularly use Remote Desktop might want to opt for Windows 8 Pro.

Windows 8 pricing

If you buy a PC, laptop or tablet running Windows 8, the cost of the operating system is included in the price. It's the upgrade price that's important, and Microsoft has followed Apple's lead in drastically reducing the price compared to Windows 7.

Provided that your computer is running Windows XP, Vista or Windows 7, you can upgrade to Windows 8 for just £25. If you buy a new computer now, before the operating system is released, you can upgrade for just £15. These prices are unlikely to last for long, though, and everything points to a price increase in January 2013.

Pricing for Windows 8 Pro in the UK has yet to be decided.



Windows 8 and RT: our expert verdict

Use Windows 8 for a few minutes and the chances are you'll hate it. It takes a lot longer than this to get used to the Modern user interface and the way most things scroll left and right rather than up and down.

It's easy to dismiss Windows 8 apps as gimmicks, since many lack features. However, we're certain that this will change as the core apps are developed and third-party apps for well-known brands begin to appear.

It's questionable whether the Modern user interface is necessary or even useful on a PC or laptop. You can go days without seeing it, since Windows 8 returns you to the last app you used prior to putting the PC in Sleep mode. If you were running apps on the desktop, that's what you'll see after typing in your password on the Lock screen.

When you do use the new Start screen, the live tiles can become rather overwhelming as they flash information at you. Some are arguably pointless - there's little value in seeing faces from random contacts appear on the People tile, for example.

It's difficult to get used to working on the desktop without a Start menu, but the universal search is a great tool for quickly finding apps, files, settings and even searching the web.

Windows 8 is noticeably faster than Windows 7, yet its hardware requirements are no more demanding - it runs fine even on older machines. Not only does it start up and shut down quicker, but it's also faster at copying files and loading web pages. Hardware is accelerated, so even something as basic as word processing is slicker and more responsive.

It's also more secure. You can install a different security suite if you want, but Windows 8 offers decent protection out of the box.

As it's more efficient with power, you'll be able to work longer on your laptop between charges.

It's the first Windows OS to integrate the online services we use every day, so the information you want is easily available without having to open a browser and go to a website. Whether you want to see what people are up to, send someone a message or check your own personalised news feed, it's all built-in.

Microsoft needs to get the Windows Store on as many devices as possible to persuade developers to build apps, but it can feel as though the Modern user interface exists on PCs solely for that reason.

We've yet to get our hands on a Surface tablet, but the fact that it will have Office preloaded and a built-in keyboard already makes it a more compelling productivity tool than an iPad. That you can simultaneously run two apps onscreen also helps.

You really need a touchscreen to get the most from Windows 8 but, with the right hardware, it's quick and even fun to use with a keyboard and (touch) mouse.

It's important to remember that Windows 8 is in effect a brand-new OS. It will run your old Windows programs but, as far as Modern apps and Windows RT tablets are concerned, this is just the beginning.

Combining the interface, performance, security and new features, all for £25, Windows 8 is a must-have. ⊠

Protect your smartphone, laptop, tablet and other mobile devices when you're out and about. Mike Bedford looks at the best ways to ensure your tech kit doesn't get lost, stolen or damaged

rom smartphones to laptops, and digital cameras to tablets and e-readers, many of us are investing in more portable kit than ever before. We carry our gadgets everywhere with us, and store all sorts of personal data to their internal memory, with little thought to security. But their loss can be devastating.

As soon as you take any valuable gear outside the safe confines of your home or office, the chances of it being lost, stolen or damaged increase. Even more alarming is the potential loss of your data stored on the device. After all, gadgets can be replaced, but the same isn't always true of your emails, documents, photos, video, music and more.

You can minimise these risks by taking some sensible precautions. Over the following pages, we'll provide practical advice on how to protect your gear on the move.

First, we'll look at the bewildering array of products aimed at preventing your mobile devices falling into the hands of thieves, and provide some guidance on the pros and cons of each. Then we'll see how to ensure that your valuable data isn't lost when the worst happens and you're parted from your kit.

We'll also look at the various types of cases that can protect portable gear from accidental damage. Finally, we'll consider insurance and mention some common-sense precautions that you can take to help protect your devices.

There are no cast-iron guarantees, but if you follow our guidance and are prepared to make a modest financial investment in protecting your pride and joy, the risk of it becoming lost, damaged or stolen will dramatically decrease.





PCP

Anti-theft accessories

bewildering range of so-called 'anti-theft' products is available to protect your portable devices. All serve one of two purposes; a few do both.

Some products can help to prevent your kit being stolen in the first place; others can increase the chances of it being returned to you if it falls into the wrong hands. It's worth using both methods for maximum protection.

In the same way that the first line of defence for our homes is a lock and key, the

same is true of our portable gear. Most laptops have a Kensington socket, a slot named after a laptop security TARGUS also makes cable laptop locks company that makes steel cables that lock into this socket and are secured around

an immovable object, such as a desk, with a combination lock or padlock.

Several other companies, including Targus, also sell compatible security cables. Prices start at around £10.

Kensington locks

Smaller devices such as tablets, e-readers and smartphones rarely have security sockets, but there are accessories that let you attach a lock. Kensington's SecureBack range, for example, is available for iPad, Windows and Android tablets, and starts at around £30. Similar products can be found cheaper elsewhere, but few manufacturers offer such a large choice.

Another way to physically prevent someone making off with your kit is a Kensington-type socket that attaches to the equipment's case using high-strength adhesive pads. This is cheaper than a security case and can be used with just about any type of portable gear.

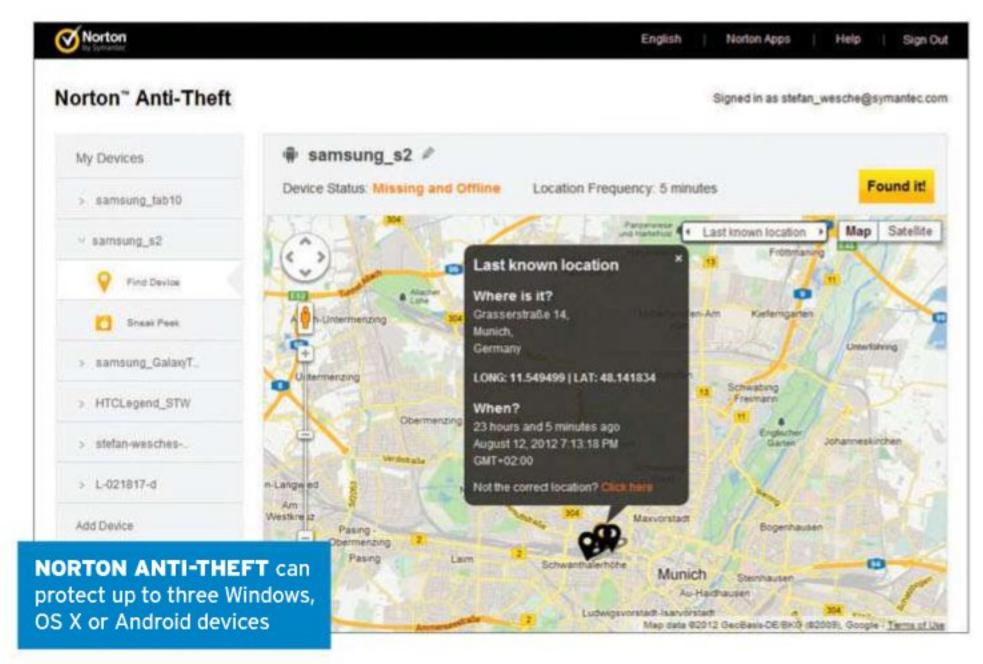
If you like the sound of this, go
for a low-profile version, such as the
SecurePad from Creation Security,
which is available for around £10.
Bear in mind, though, that this product
is intended for use with the iPad; if you
were to use it to secure a smartphone, a thief
could simply remove the battery cover.

Safes

If you need to protect tech that's left in the car, consider an Autosafe. These are lockable boxes that can be firmly anchored in the car boot or in a footwell. Prices start at £52.

Alarms

Another means of stopping a thief getting away with your prized portable device is to protect it with an alarm. The £15 Lock Alarm Mini from Lock Alarms can be secured to both your mobile device and a fixed object using a thin steel cable.





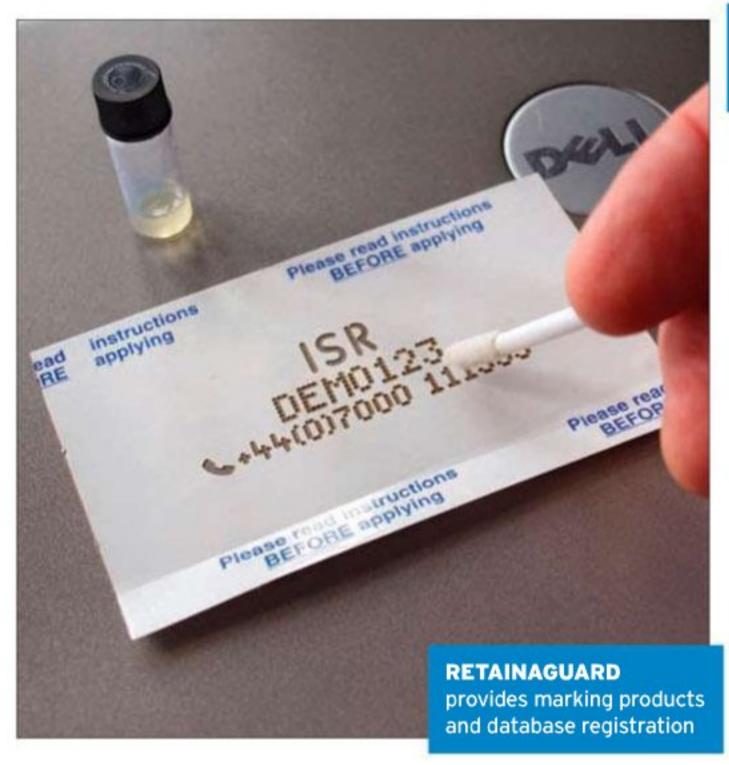
The Lock Alarm Mini will work with anything that has a slot through which you can slip the cable, and it also comes with an adaptor for a Kensington socket. A 100dB siren sounds if the lock cable is cut or motion is detected.

An alternative is the proximity alarm, which sounds a siren if the equipment to which the alarm is attached exceeds a certain distance from a keyfob in your pocket. The £10 Mobile Laptop Alarm NB-3500p from Trust is one such alarm. There's no way to securely attach it to your laptop, but it can easily be stored in your laptop case - an opportunist thief probably won't stop long enough to check what's inside the bag they've just lifted.

None of these alarms is particularly easy to use with very compact devices such as smartphones, so this is where the Bluetooth proximity alarm comes in. Typified by the Mi-Zone Tag, which is available for many types of tablet and smartphone, an app is installed on the device and a separate tag remains in contact via Bluetooth. If the protected device is separated from the tag an alarm sounds. The Mi-Zone Tag costs £39.

Marking your kit

If you've done your best to secure your kit and it still does a vanishing act, you can try to ensure that it's safely returned. If it's been stolen then your chances of getting back your kit are slim, but there is still hope. And if it's simply been left on a bus or train, some





kind-natured stranger may return it to you provided they know who you are.

The most effective way of getting back your kit if it's lost or stolen is to indelibly mark it. If it's recovered by the police then they will know who to contact. Marking kits are prepared with your details and take the form of small labels that are attached using high-strength adhesive, or stencils that allow you to mark your kit in such a way that it etches the surface, thereby making removal impossible. Some companies let you specify the text, such as your name and postcode, whereas others provide a unique

serial number that is stored in a database accessible by the police. This second method makes greater sense if you will one day sell or pass on your device, since the new owner can easily replace your details with their own.

Retainaguard (retainagroup.com) provides marking products and database registration. You can order these from RM (rm.com), but prices vary - get in touch to find out how much it will cost to mark all your gear.

The company also provides a labelling system that incorporates an ultraviolet element. Even if the label is removed, the mark can still be read under UV light.

Forensic marking products are invisible and uniquely coded, with the police able to detect the mark with a UV lamp. Recovered equipment can be forensically analysed, thereby allowing the registered owner to be determined from a database.

SmartWater is the most common system of this type, and kits containing enough fluid to mark 10s of items start at £60 per year.

In deciding between visible and invisible marking, it's important to recognise the pros and cons of each approach. The main benefit of visible marking is that it acts as a deterrent; the down side is that it detracts from the appearance of your kit. Invisible marking has no visual impact, but it doesn't have the same deterrent effect. However, SmartWater is supplied with tamper-resistant labels, which can serve to warn a would-be thief that the equipment is marked.

An alternative is to use software. Norton Anti-Theft, which costs from £30, can protect up to three devices running Windows, OS X or Android. If a protected device is stolen, you can track it via its built-in GPS or from information on the Wi-Fi hotspots to which it connects. Norton Anti-Theft also lets you remotely lock down your personal files, preventing the thief from accessing your data, and you can even use the device's built-in camera to snap a photo of whoever's using it at the time.



Data protection

t's annoying and inconvenient if your portable kit is lost, stolen or damaged, but the hardware itself can be replaced. Unfortunately, the same isn't always true of the data stored on it. As well as following our advice on protecting your gear from theft and accidental damage, it's wise to protect your data.

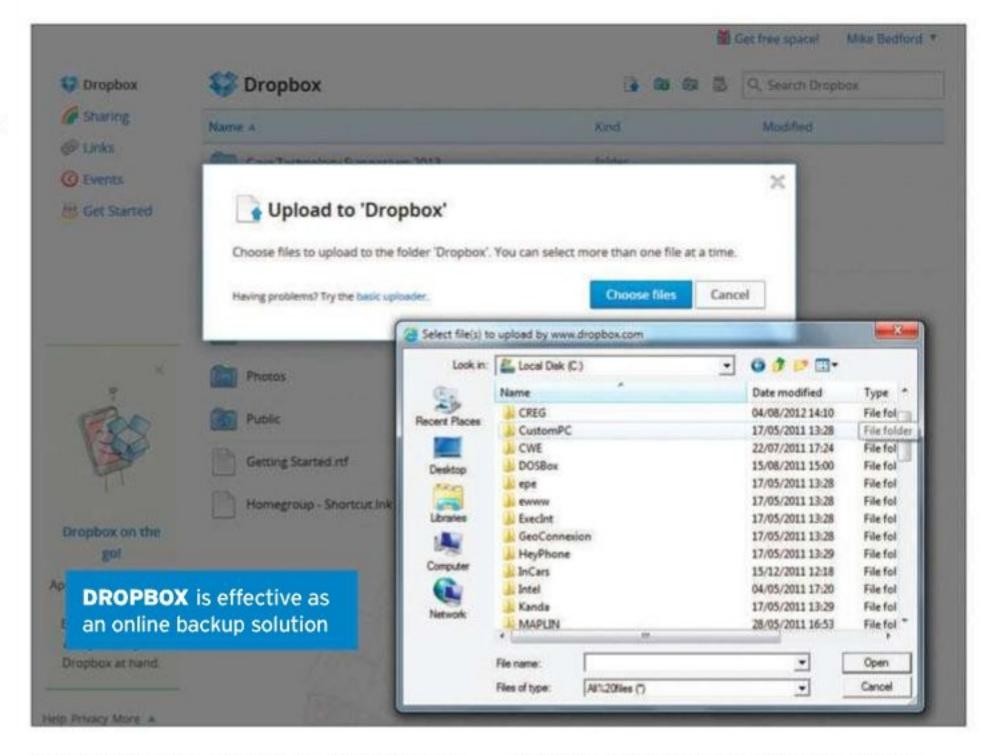
First and foremost, this means backing up on a regular basis. As the primary method, we suggest that you regularly synchronise your portable devices with your home or office PC. This means you need only one backup solution, since the data from all your devices will be backed up in the same place as your PC's data.

Backing up your central PC can be done locally, online or, in an ideal world, both. We looked in some detail at how to do that in our recent Backup Superguide (read it online at tinyurl.com/c3davg4). In essence, though, you'll either be backing up to local storage, such as a hard drive or optical disc, or to an online service, most of which are free up to a given amount of storage space.

Convenient as it might be to back up everything via a home or office PC, you might be away from home for a while. Waiting until you get home to do a backup puts your newer data at too great a risk.

For this reason, it's worth investigating methods of backing up directly from your devices. A word of warning is appropriate, though. You'll most commonly use this method to back up totally new files, such





as photographs you've taken since you were last at home. However, if you edit documents that you also work on at home, and back up from home, you need to ensure that you back up only the most recent version.

Some backup methods can handle conflicting changes to a document (Dropbox saves an additional copy of the file, for example), but others will overwrite the file.

A laptop is easy enough to deal with, as you'll use much the same methods to back up its data as you would with your home PC, and the same is true of most tablets - provided that you're prepared to carry a USB external drive, and that the tablet has a USB port.

Online backup

Other safeguards include online backup services, such as Dropbox, Carbonite or SugarSync, which are useful when you're in range of a Wi-Fi hotspot. Apps are available for iOS and Android, and there are desktop versions for Windows and OS X. It's usually possible to log in through the service's web interface on other devices, too.

In addition to these PC-centric solutions, there are services aimed at Apple and Android devices. Apple's iCloud provides manual and automatic backup for iPad and iPhone. It's free with up to 5GB of storage and can be used to back up photos, device settings, app data, messages and

ringtones. You also get unlimited storage space for material purchased from the iTunes Store, App Store or iBookstore.

Also offering 5GB for free is Google Drive, which is compatible with Windows, OS X, Android and iOS.

Digital cameras

Two types of device require specific mention. Digital cameras can't directly connect to the internet, making it difficult to copy their files to a removable drive without a PC. Although their storage cards are usually removable, it's likely that this will be inside your device when it's lost or stolen.

Some backup devices are designed specifically for cameras, and could be a solution for serious photographers. These are standalone storage devices with memory card slots that allow you to make a copy of your photos. The 160GB Ex-Pro Photo Bank costs £110 from Amazon, for example.

E-readers

Finally, we come to e-readers. If you own a Kindle, there's no real need to back up your data as you can re-download any e-books you've previously bought from Amazon. For other e-readers, be sure to purchase your e-books from a website that allows you to re-download books, should you accidentally delete one, or your device is lost or stolen before you've had a chance to back it up.



Cases & bags

ne of the most obvious ways to protect your gear from accidental damage is to put it in a case or bag. Some of these accessories could even reduce the likelihood of theft.

While it's tempting to carry your laptop in a fancy, branded case, a senior police officer told us that he always carried his in a scruffy supermarket carrier bag, since nobody would think it contained anything valuable.

If you hanker after something a bit more stylish, a rucksack is much more difficult for a thief to pull off your back than to snatch a conventional case from your hand. Laptop-specific rucksacks start at around £15. The V7 Professional Laptop Backpack from box.co.uk, for example, looks inconspicuous and can carry laptops with screens up to 17in.

Extreme protection

In defence against accidental damage, the degree of protection you choose depends on the hostility of the environment in which you intend to use your gear, and how much you value your equipment.

Don't make the mistake of thinking that you're likely to trash unprotected gear only if you engage in extreme sports or work on a building site or similar.

Anyone can get caught in a heavy downpour, and something as simple as braking heavily in a car could result in kit on the back seat being thrown on to the floor. Beaches are particularly risky environments

The V7 backpack can hide your laptop from thieves



for delicate electronics, due to sand and salt water getting into tiny holes and damaging sensitive electronic equipment.

Some kit is designed to withstand these sorts of conditions. You can buy rugged

phones, cameras, laptops and more, but there's usually a premium to pay. When buying rugged gear, look for a drop-test figure and an IP-rating in the spec.

The drop-test figure is self-explanatory, but comparisons aren't always easy to make. It's not immediately obvious whether the ability to withstand a drop of 1m on to concrete means the device is tougher than if it could handle a 2m drop on to plywood. IP stands for ingress protection, and is a two digit number of which the first figure (0-6) relates to the ingress of solid objects or particles, such as sand and dust, while the second

figure (0-8), which is the most important for general equipment, refers to protection from water. See tinyurl.com/n3wevL for more.

If you can't justify the cost of rugged gear, invest in a rugged case. A range of such cases, which is popular with outdoor enthusiasts and professionals who need to use gear in extreme environments, is the Pelicase (peliproducts.co.uk, available from waterproof-cases.co.uk).

The range comprises cases that are made of hard plastic, are tough and waterproof, and have foam inserts to prevent the gear inside rattling around. These range in size from micro cases large enough for a phone or iPod (£18) to laptop cases (£128) and larger.

Pelicases might provide the ultimate in protection but, with the exception of some of the micro cases that have a headphone socket, they are generally used just for carrying your gear; the kit remains at risk when you take it out to use it.

Waterproofing

In essence extremely tough plastic bags, Aquapacs provide a high level of waterproofing. In many cases, you can continue to use your device while it's inside the enclosure - even if it has a touchscreen. Some have optically 'pure' windows, through which you can take a photo, but they don't provide the same protection as a Pelicase against being dropped or driven over. Prices range from £16 for a smartphone enclosure to £45 for a tablet case.

Tech21 offers a range of tailormade cases from £20 for various portable devices. Made from a shock-

absorbent polymer called D3O, they offer a tight fit and impact protection. While they're not nearly as tough as Pelicases, and lack the waterproofing of Aquapacs (although Tech21 has a Submariner range), these products are stylish and needn't be removed prior to use.

Griffin, too, has a super-tough Survivor range of cases for iPod, iPhone and iPad. These start at £16 from Amazon.





ackup can be thought of as an insurance policy for your data, but you should also ensure that you have adequate cover for your hardware. When your kit's at home it'll be covered by your homeinsurance policy, but this doesn't necessarily apply when you're on the move. We spoke to the Association of British Insurers, which gave us some advice on policies.

There are two main choices, both with pros and cons. The first is to add extra cover to your household policy; the second is to take out a specific mobile devices policy.

Generally, you'll have to pay an additional premium if you want loss, theft and damage

cover for items taken out of the house. However, since this should cover everything you own, it may well be a good investment.

However, if you do have to make a claim, the excess will tend to be higher than it would be with a specific mobile devices policy, and it will probably affect your no-claims discount. This option also applies only to home owners and rent-paying tenants.

Mobile devices insurance was originally aimed at phones, although these policies now tend to cover anything with a SIM; many also include laptops and e-readers. Theft and accidental damage are generally covered, and some policies also cover breakdown once the warranty has expired. Commonly, but not always, you're also protected from having to pay the cost of calls made on your phone following theft or loss, something that a household policy probably won't cover.

This is an area in which it's difficult to provide definitive advice, since policies differ between companies. The number-one rule is to carefully read the policy before signing up. Make sure you know what equipment and types of loss are covered, what excess applies, and how a claim would affect next year's renewal premium. Also, if you're going to be using your gear abroad, ensure that you're covered when overseas.

Top tips on avoiding theft



voiding theft often comes down to common sense. Don't advertise your valuable gear to thieves. If you have to leave kit in the car, hide it in the boot rather than on display. And leave your kit at home unless you need it. Remember that laptops and tablets aren't easy to hide and are easy to steal from a busy environment such as a pub.

Keep receipts of your purchases and make a record of the serial numbers of each of your devices. Not only are receipts important if you need to make a claim under the warranty, but some insurance companies also ask for them as proof that you owned the item.

If your phone is stolen and you are a pay-monthly customer, report the theft to the service provider as soon as possible. It will ensure that no-one else is able to run up your phone bill. Failure to do this could result in you being charged for calls you didn't make, and the bill could be more expensive than replacing the phone.

If you discover a theft, report it to the police. The chances of it being found and returned might be slim but, unless you report it or your kit is marked, this likelihood is zero. Your insurance company will also require a crime-reference number when you make a claim for theft.

Not only is data valuable to you, it's also valuable to a thief who may use it to your detriment. In addition to backing up your data so you can restore it following a theft or loss, sensitive data should be encrypted. This can be done simply using Cryptainer (cypherix.com) on a laptop. For smartphones and tablets, use a passcode to prevent unauthorised access and remember that its memory card is removable.





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Get online: wherever, whenever

If you've used a service such as Dropbox or SugarSync to store files online, you'll already know how revolutionary it can feel. Your documents are available from any computer, smartphone or tablet that has an internet connection and a web browser. You simply place a file in the dedicated folder on your home PC and it's automatically available to any other computers on to which you've installed the sharing software.

Trouble is, you have to pay a monthly subscription if you want more than a few gigabytes of storage, and there's the worry that your files could be seen by others. On page 108, we show you how to build your own cloud server using your existing PC and free software.

Sticking with the DIY theme, we explain how to set up a slick-looking small-business website with Moonfruit on page 112. Customers increasingly expect to find services online, and in these cash-strapped times it's more important than ever to have a web presence.

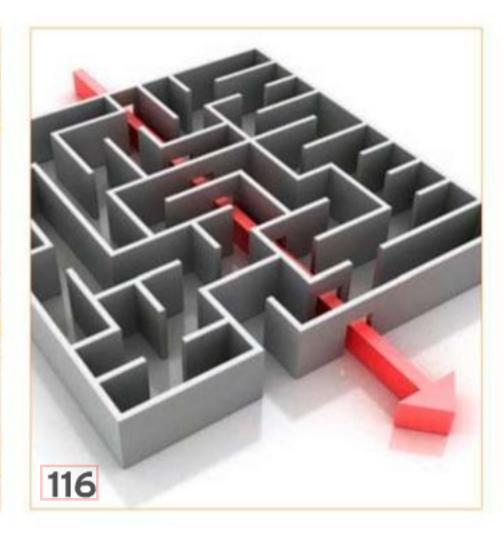
With more and more mobile devices demanding a connection to your broadband router, you may find its signal simply won't stretch to all the areas in the home in which you want to get online. Rather than buying long network cables, you can use your existing mains wiring to share internet access from room to room. We show you how to set up powerline (or HomePlug) networking adaptors on page 118.

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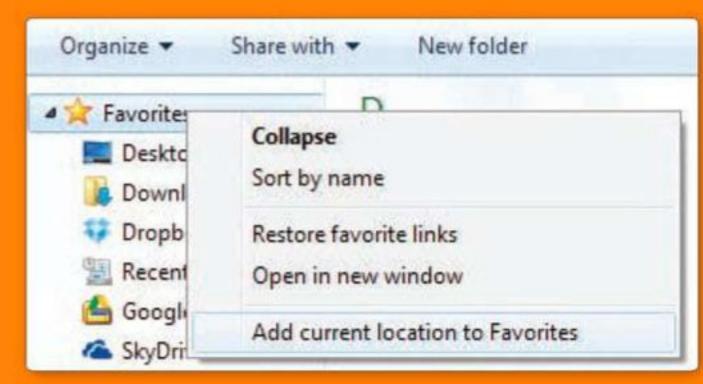


QUICK TIP: ADD FOLDERS TO WINDOWS' FAVORITES BAR

Windows Explorer offers a Favorites list in its lefthand pane in Windows 7 and Vista. By default, this includes several folders, although the exact items differ between the two versions of Windows. To make the Favorites list truly useful, you'll want to add the folders you use most often.

To do this, navigate to a folder you regularly use, then right-click on the Favorites link in Windows Explorer and choose 'Add current location to Favorites'.

To remove an item from the list, right-click the Favorites link and choose 'Open in new window'. This displays a list of shortcuts, and you can delete items at will. Since they are just shortcuts, you won't delete the folder to which it links.

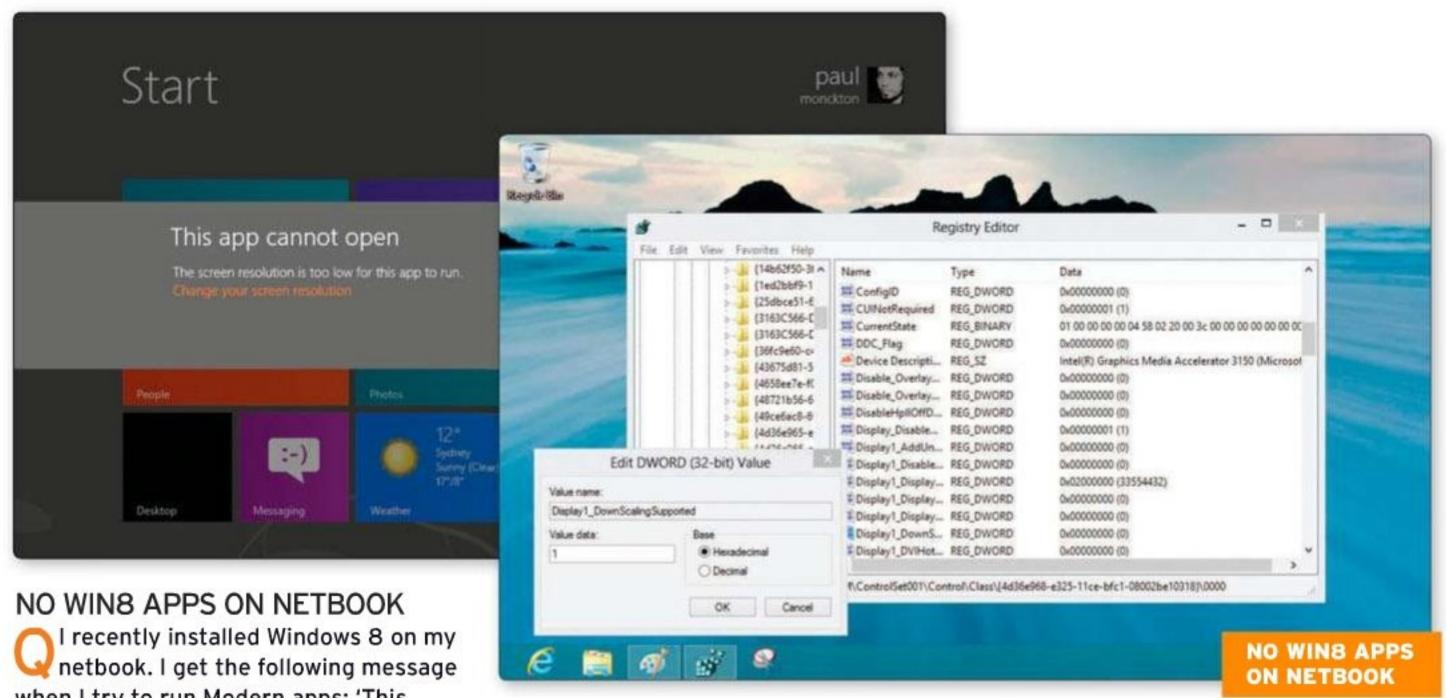


YOUR QUESTIONS ANSWERED

Expert computing advice

Paul Monckton tackles readers' hardware and software conundrums





when I try to run Modern apps: 'This app can't open. The screen resolution is too low for this app to run. Change your screen resolution'. How can I fix this?

Windows 8 requires a 1024x768 resolution to correctly operate, particularly in its Modern UI or in Windows 8 apps (previously known as Metro apps). Most netbooks have a lower widescreen resolution of 1024x600 pixels.

There are a couple of workarounds that will allow you to run the apps on a netbook, although neither is entirely satisfactory.

The first is to plug your netbook into an external display capable of at least 1024x768. Modern apps will have no

problem running on this monitor when the resolution is appropriately increased.

If you want to run Windows 8 apps on your netbook's built-in screen, you can usually configure the graphics system to run a 1024x768 desktop scaled to 1024x600. This will allow programs to run at their required 1024x768, but it will slow down your graphics performance and cause some quality loss, although text will remain legible. You can switch back to 1024x600 when you're not using Windows 8 apps to improve the screen readability.

You need to make some minor edits to the Windows Registry to enable your

netbook to run with a resolution higher than 1024x768. You will also need to be logged into an Administrator account.

Open the Start menu and type regedit into the Search box. Double-click the regedit icon that appears in the search results.

Click Edit, Find in the Registry Editor. Type Display1_DownScalingSupported into the Find what: field.

Click Find Next to locate the Registry key, then double-click it to edit the value. Change the Value Data from 0 to 1 and click Ok.

The Registry Editor may locate more than one Display1_DownScalingSupported; you'll need to edit all instances.

Reboot your netbook and you should find that additional display resolution options are available, including 1024x768. Select this option to run your Windows 8 apps.

This method also works with Windows 7, and is useful in some scenarios where certain applications create dialog boxes that won't fit onscreen. You can also use it with remote-control software such as LogMeIn.



WIRELESS CONFUSION

I frequently find myself trying to connect to a Wi-Fi hotspot with the same name as one I use elsewhere, but with a different password. How can I change the stored password for a Wi-Fi connection in Windows? Would upgrading to Windows 8 make it easier?



In Windows 7, open to the Start menu and type manage wireless networks into the Search bar. Double-click 'Manage Wireless Networks' when it appears in the results to bring up the window shown on the previous page. You'll be able to see a list of the networks to which you are connected and any you may have previously joined.

Right-clicking a wireless network will bring up a menu from which you can delete the connection or enter a Properties dialog to change several parameters, including whether or not Windows should automatically connect to this network. You can also re-enter the security key if necessary. This could be useful if you find yourself trying to connect to a network with the same name as one you have previously set up but with a different password.

Microsoft has overhauled wireless networking in Windows 8, so our above instructions will be of little use in this OS.

In beta versions of Windows 8 you could still find your way to the 'Manage Wireless Networks' dialog, even though it had been removed from the main user interface. The final version of Windows 8 removes this option.



Instead, Windows 8 attempts to more intelligently manage all your networks, integrating Wi-Fi and 3G operation.

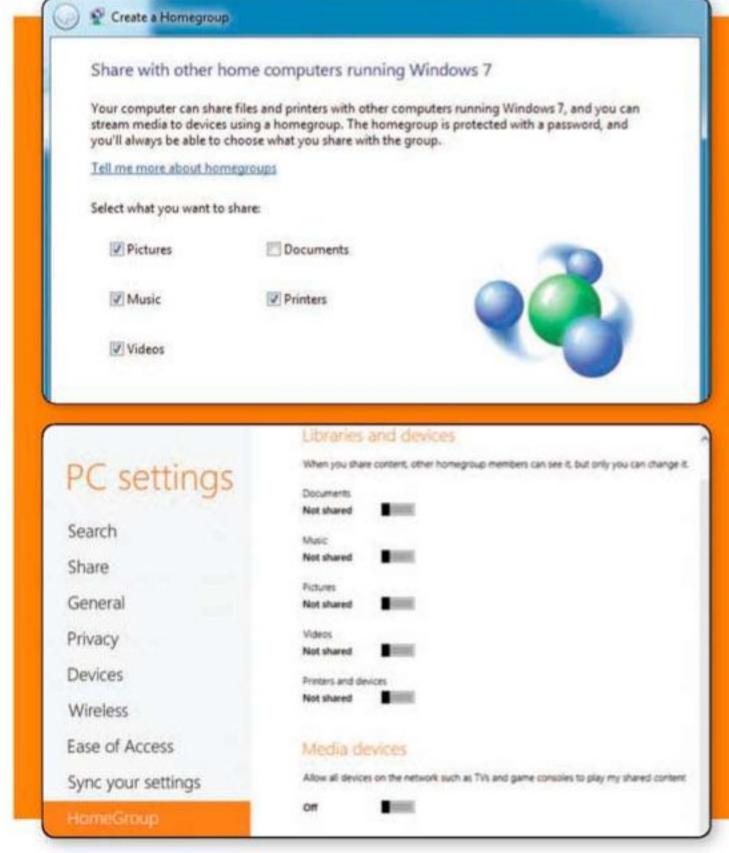
To access these settings, tap Windows, I to bring up the settings charm. Click the network icon near the bottom to display a list of all your networks.

Right-click a wireless network to bring up a menu of management options. You can

select 'Forget this network' to remove it from the list, or 'View connection properties' to bring up a management dialog similar to that found in Windows 7.

If you're using a data connection with a usage cap, you can select 'Set as metered connection'. The 'Show estimated data usage' option will allow you to keep tabs on your data usage.

Continues >>



QUICK TIP: CREATE A HOMEGROUP NETWORK

Microsoft introduced HomeGroup in Windows 7, which offers an easy way to set up and configure sharing between a group of PCs and laptops. Note that Windows Starter and Windows Home Basic versions can join a HomeGroup, but lack the ability to create one.

If you install Windows from scratch, you will be prompted to set up a HomeGroup as part of the initial configuration. If you didn't do this, you can create a HomeGroup at any time.

To get started, go to the Start menu and type **homegroup** in the Search box. Double-click HomeGroup when it appears in the list to access its settings menu.

If a HomeGroup already exists on the network, you'll be asked whether you want to join it. You'll need to get the password from whoever set up the HomeGroup. Enter it and click Join to connect.

If no HomeGroup exists, a button will appear allowing you to create one. Click this and specify whether you would like to share pictures, music, videos, documents and printers. Click Next and Windows will provide a password for you to give to other users.

Windows 8 also supports HomeGroups and comes with a new configuration interface under PC Settings. Scroll down to HomeGroup and you will be presented with a screen where you can turn on or off various sharing options.

NETWORKING SPEED

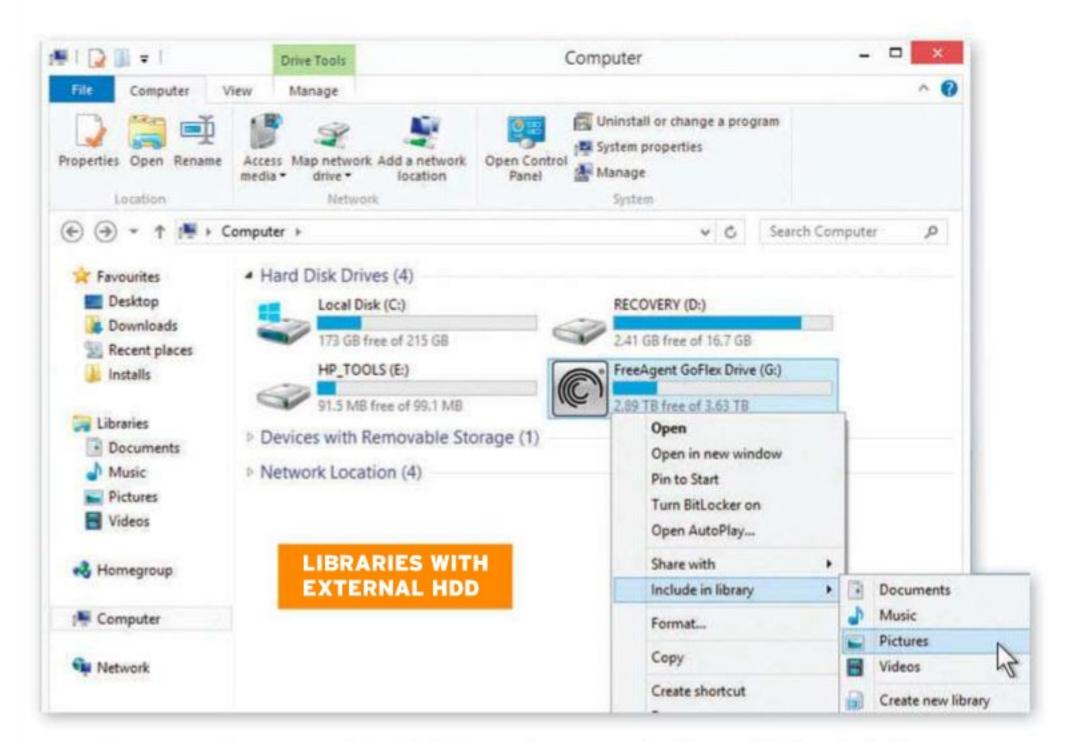
I have a Wireless N150 modem router to which I wirelessly connect two laptops, plus a desktop PC via 200Mbps powerline adaptors. The software supplied with the adaptors shows them to be running at 195Mbps. How can this be possible if my router has a maximum speed of 150Mbps? My broadband download speed is around 5.5Mbps; why is this so much slower?

Your modem router is simultaneously using three types of connection, each of which has a different maximum speed.

The N150 specification refers only to the maximum speed of your Wi-Fi network and isn't related to the performance of your broadband connection or powerline adaptors. It will therefore determine the maximum data-transfer speed between wireless devices connected to your router.

Each of your powerline adaptors will be connected directly to a wired network port: one on the router and another on your desktop PC. These ports have their own maximum speeds. ADSL routers are often limited to 100Mbps, although some support 1,000Mbps, which is the highest offered by most modern PCs.

Although the connection is reported as 195Mbps, you'll probably be achieving a considerably lower throughput via this connection - not that it matters, because your desktop won't be able to communicate with your laptops any faster than the maximum speed of the wireless connection, which itself will be slower than the theoretical 150Mbps it claims.



Furthermore, all your PCs will be limited by your broadband speed rather than your home network performance when it comes to accessing the internet.

The speed of your broadband connection is determined by the technology used by your ISP (most likely ADSL2+), the broadband package you're signed up to, the distance to your local exchange and the quality of your telephone line.

VANISHING DVD DRIVE

The two DVD drives on my XP PC 🏿 have stopped working. Windows Explorer tells me that the drive has been changed or moved and the shortcut no

longer works. I have tried uninstalling and reinstalling the drivers, and System Restore fixes the problem only until the next reboot. Please help.

This problem can occur when an installation of DVD-burning software goes wrong. It can usually be fixed with a Registry edit or by using one of Microsoft's 'Fix It' automated troubleshooting services.

The Fix It for this problem can be found at tinyurl.com/ya7q9b. This page also details how to manually resolve the problem by editing the Registry.

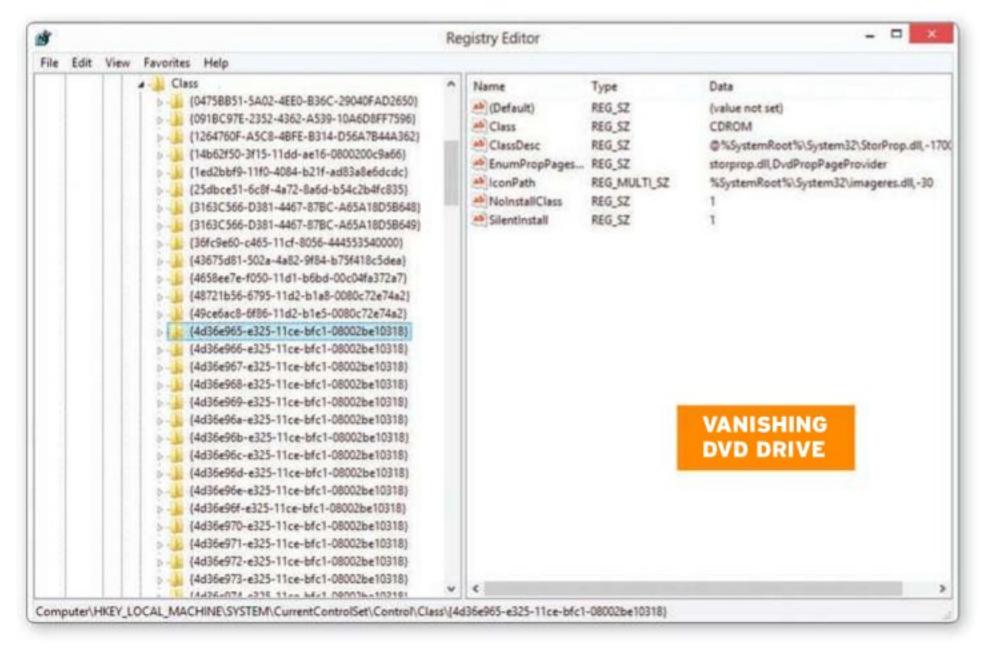
To do this, you must open the Start menu and type regedit into the Search bar, then double-click the Regedit icon to launch the Registry Editor. Search for Hkey_Local_ Machine\System\CurrentControlSet\Control\ Class\{4D36E965-E325-11CE-BFC1-08002BE10318}. Delete the entries for 'UpperFilters' and 'LowerFilters' in the right pane. Exit Regedit and reboot the PC.

LIBRARIES WITH EXTERNAL HDD

I'd like to transfer to an external drive the documents, music photos and video stored on my Windows 7 PC. Could I continue to access these folders via the Libraries in Windows 7?

Yes, you would be able to continue using Windows 7 Libraries. In fact, this is exactly what they were designed for.

Libraries allow you to organise your files into collections, regardless of where they are stored on your PC. External hard drives



can also be used, provided that they appear in the 'Hard Disk Drives' in Computer. Removable storage devices such as USB flash drives do not tend to work this way.

If you're intending to frequently access these files, it's worth getting a fast USB 3.0 or eSATA drive to speed up data transfer.

Each Library can contain files held in folders in various locations and on different drives, allowing you to search, sort and share them as though they were in a single folder. Windows automatically indexes the files to speed up searching.

You can also share a Library over a network. This is a convenient way to gather up folders which may be located in various different locations and share them as though they were a single entity.

Once you've plugged in your external drive and copied over the files, open Computer in Windows Explorer. Right-click any folder stored on your external drive and choose 'Include in Library'.

From here you can select which of the existing Libraries you would like to add your folder to. You can include a folder in more than one library by repeating the process and selecting a different library each time. You can also create new libraries to house your own categories of files.

Note that Libraries were introduced with Windows 7, so if you're running an older version of Windows then you're out of luck.

However, the feature is retained in Windows 8 and a couple of new features have been added. When you create a new Library you can select a custom icon to help it stand out. You can also pin a Library to the Start page so it will appear as its own tile.

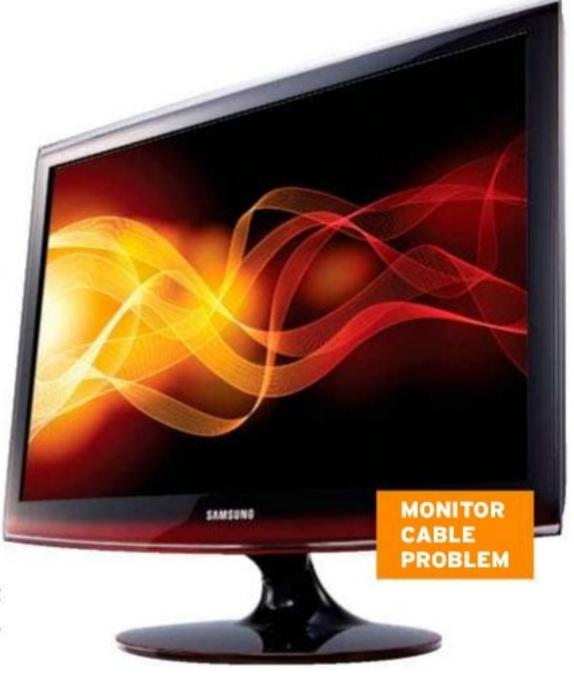
MONITOR CABLE PROBLEM

I've been experiencing problems with my Samsung T220 display in analogue mode. The image is wavy at the borders and flickering. My son advised me to use a DVI cable, but when I plug it in I just see my desktop background, with no Windows icons or mouse cursor. The display still flickers might it be on the way out?

From your description, it sounds as though you've connected the DVI-D cable at the same time as the VGA cable. This will result in the PC detecting a single monitor as two displays. The desktop you're seeing without your icons is what would be displayed on the second monitor in a dual-screen setup.

Try booting the PC with only the DVI-D cable connected. It's likely that the DVI-D connection will give you a better-quality picture than VGA.

However, the flickering does indeed suggest a problem with the monitor, and



you may need to replace it. Alternatively, it could be a problem with your graphics card, but you would typically notice graphical corruption as well as flickering.

BROKEN LAPTOP SCREEN

dropped my laptop and now see a black screen when I switch it on. I want to get a new laptop under warranty, but first need to remove my data from the hard drive. It has an HDMI port, so I tried connecting the laptop to an external monitor and pressing the Fn and F1-9 keys, but I can't get a connection. The screen says no HDMI input found.

Continues >>

TECH JARGON BUSTER

Bluetooth 4.0: The latest Bluetooth standard greatly improves on previous versions by adding two new technologies and using considerably less power.

SSD: A solid-state drive (SSD) is a storage device that appears to your PC as a normal hard disk, but consists of high-speed memory chips that are silent and consume less energy than standard rotating magnetic disks.

Android Jelly Bean: Version 4.1 of Google's Android operating system for smartphones and tablets. It incorporates an enhanced and more responsive user interface than 4.0 Ice Cream Sandwich.

DisplayPort: A high-performance digital interface for connecting displays to PCs and laptops. Like HDMI, it can also include audio information, but adds support for other forms of data transmission, such as USB. It is backward-compatible with VGA and DVI via adaptors, and is capable of higher resolutions than HDMI.

Modern apps: Windows 8 apps have, until recently, been known as Metro apps. The codename Metro has been discontinued, and such apps will now be referred to as Windows 8 or Modern apps; the Metro interface will be known as the Modern interface. However, there remains some confusion, since Windows 8 also supports older programs that run in Windows 7.

Windows Registry: Windows stores information about configuration and settings in a centralised database called the Registry. It's used extensively by the operating system, while most applications

also store information here. Some low-level configuration tweaks involve manually editing the Registry using the Windows application Regedit.

Wireless N150: Wireless N150 is a subset of the 802.11n Wi-Fi standard. It incorporates most of the improvements introduced by previous versions, but omits the channel-bonding feature. This limits it to a maximum theoretical data rate of 150Mbps, rather than the 300Mbps available to dual-channel equipment.

H.265: This video format offers around twice the compression of H.264, the current standard for compressing high-definition video. It will therefore halve the bandwidth required to transmit TV channels and significantly reduce the burden on mobile networks.



First, check the extent of the damage to the screen. It could be that the backlight has broken, but some or all of the screen pixels may still be intact. Try shining a light on the screen to see whether you can make out a faint image of the Windows desktop on the black screen. If you can, you may be able to see enough to be able to enable the external display using the Windows Mobility Center. Search for it from the Start menu (or press Windows, X), then look for External Display.

Different laptops use different keys for enabling an external monitor. You haven't told us the model of laptop you're using, so you'll need to look up the specific key combination for your model to ensure you're pressing the right keys.

If you simply can't get the HDMI port to work (perhaps it was also damaged in the fall), the best way to remove the data from your hard drive is to take it out of the laptop and place it in a USB enclosure or drive caddy that you can connect to another PC.

Provided that you haven't used any encryption, you should be able to copy off your files from the laptop hard drive and then perform a low-level format or secure-erase procedure using a free utility such as CCleaner (tinyurl.com/d48bcx6). You can then replace the hard drive in the broken laptop for insurance purposes.

If you're expecting an identical laptop as a replacement, consider making an image backup of your existing hard drive using a tool such as Acronis True Image. You could then restore this image on to your new laptop. If you do this, be sure to take an image backup of the new laptop before you start, in case your saved image backup proves incompatible with the new PC.

CONTACT US



Email your Helproom questions to helproom@pcadvisor.co.uk. Please use 'Helproom' as the subject header and give your full name, the operating system you're using and other product details. We will let you know by email if your query has been selected for inclusion in these pages. If your query is urgent, you may find it useful to visit our forum at pcadvisor.co.uk/helproom.

Helproom aims to give you the best assistance possible. But, given the

limitations of this type of advice, we can't guarantee what we say will work and we can't accept responsibility for any damage arising as a result.

Always back up your system before you make any changes, including software installations.

Please note that we are unable to respond to letters or telephone requests, but we will endeavour to answer queries submitted by email or via our Helproom forum.

For more PC help go to: pcadvisor.co.uk/helproom



SEARCH THE PC ADVISOR FREE ONLINE HELPROOM



The PC Advisor online Helproom contains an indispensable database of answers to common questions regarding all aspects of PC problems. This ranges from general Windows issues to problems with specific apps, and covers all types of PC hardware and software, including system components and peripherals.

Alternatively, you can ask for help from the experts on our online forums. Sign up to be a registered user – which is free – and then browse to one of the discussion forums. In the Helproom your first stop should be the searchable database of frequently asked and previously answered queries. With more than 1.5 million forum posts, you'll almost certainly find your answer in this archive of queries – just enter a few keywords.

If our online database can't solve your problem, try posting a question in the Helproom forum, where more than 200 queries are answered every day. The forum is manned by our team of Helproom Angels, who are ready and willing to lend a hand with anything from system crashes to virus alerts.

helproom@pcadvisor.co.uk pcadvisor.co.uk/helproom

A Samsung Galaxy S III PowerSkin Battery Case

PC Advisor is offering 17 lucky readers the chance to win a PowerSkin Battery Case for the Samsung Galaxy S III, worth £59.99 each!

The PowerSkin Battery Case for the Galaxy S III provides more power for your smartphone, so your life charges on. You can keep working. Keep playing. Keep moving. PowerSkin is your go-to, go-anywhere, go on-and-on power source. Because battery life is life.

And when (not if) you drop your phone along the way, life charges on. With a sleek, protective design that fits your phone and your style like a second skin, PowerSkin is there, where the silicone rubber hits the road of your life. More, PowerSkin is XPAL Powered, meaning it's charged by patented battery technology that reflects the highest standards of safety, quality and performance. We've got you – and your phone – covered.

The PowerSkin Battery Case provides an extra 1,500mAh of

battery power, which translates to up to 170 minutes extra talk time or 97 hours extra standby. The case adds only 95g and, thanks to a silicone-based cover and coating, provides extra protection and a soft-grip feel.

The PowerSkin is designed to provide ease of use. With an NFC compatibility chip built-in, you can make wireless payments or transfer data without removing the PowerSkin Battery Case.

The Battery Case is charged with a standard Micro-USB cable. Thanks to the LEDs on the back of the case, you'll know exactly how much power remains in the battery.

The PowerSkin Battery Case is the ideal solution for your mobile. It offers protection, extra power and ease of use, which are crucial factors in the everyday use of your Samsung Galaxy S III smartphone.



To enter, simply visit pcadvisor.co.uk/competitions and answer the following question:

At what mAh is the PowerSkin Battery Case for the Samsung Galaxy S III rated? A: 1,200mAh

B: 1,500mAh C: 2,100mAh

Competition closes 8 November 2012









Set up a personal cloud



Forget Dropbox, Mozy and SugarSync, Roland Waddilove shows how to save money by building your own cloud server using your existing computer



Storing online documents, music, photos and more releases space on your PC, smartphone or tablet, and allows those files to be accessed from any device with an internet connection. But in doing so you place the responsibility of securing your files in the hands of another.

You might trust a wellknown cloud-storage service such as Dropbox, Mozy or SugarSync with your data, safe in the knowledge that it probably isn't about to go bust and take your files with it. But some of the clauses in their terms and conditions could cause concern. This excerpt is taken from Mozy, for example: 'You grant Mozy a worldwide, royalty-free, non-exclusive licence to use any such content.'

Also, if you have anything more than a few gigabytes to store, cloud-storage services demand a monthly fee.

So what's the alternative? An option you may not have considered is to run your own cloud service. It's easier than you might think: all you need is a PC, internet access and some free software.

An advantage of this approach is that your online storage capacity is limited only by that of your hard disk, and it's easy to add a second internal or external drive. You can store files of all types and sizes, there are no monthly fees, and your data is secure.

Unless you actively grant permission to others, only you will be able to access your cloud server.

Before you rush into setting up a cloud server, though, consider the following points. Your PC must be switched on when you leave the house, running up your electricity bill. You'll also be responsible for maintaining the hardware, making backups, and ensuring that Windows is running smoothly.

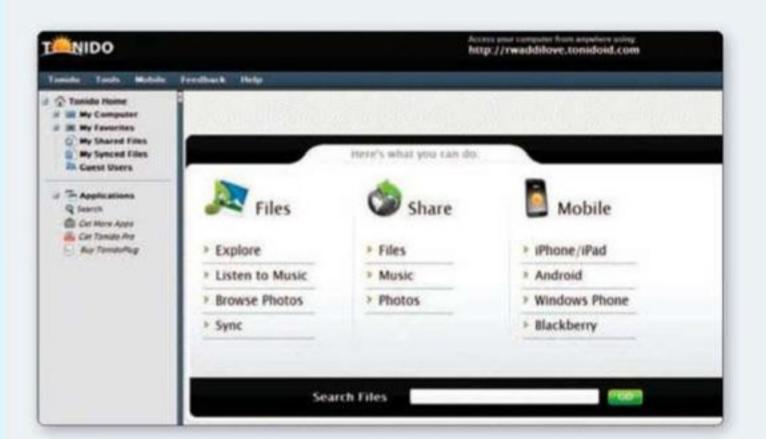
Also, in the reverse of normal internet usage, where downloads are fast and uploads are slow, you may find it takes a long time to download large files from your cloud server.

Several programs can help you set up a cloud server, including ownCloud and Oxygen; here, we'll show you how to use the free Tonido.

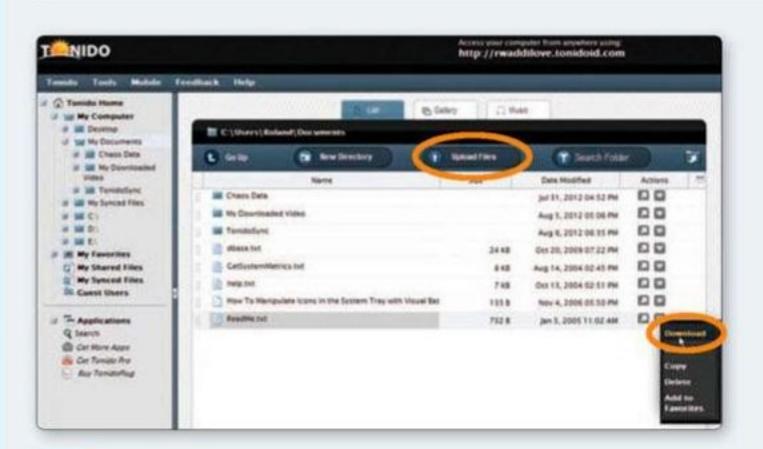
GETTING STARTED WITH TONIDO



Head to tonido.com and click Downloads. The software you need to turn a PC into a cloud server is Tonido Desktop Software for Windows. There are two versions; the portable edition doesn't need to be installed.

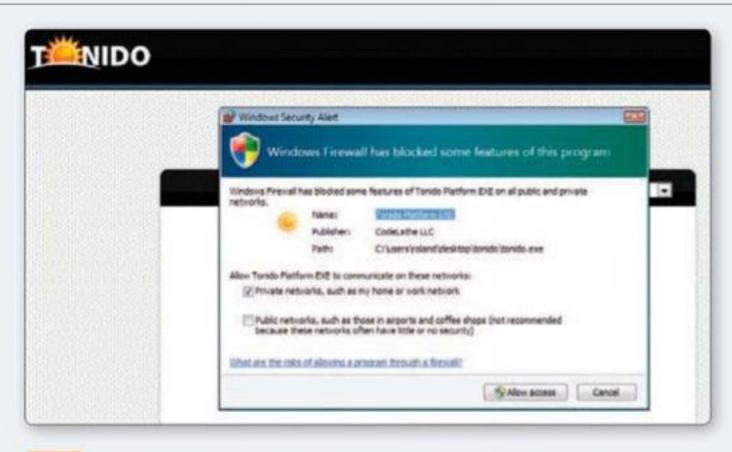


Click through the welcome message to reveal the above screen; this indicates that Tonido is active. The service runs in the background, even when your web browser is closed, so you can continue to use the PC as normal - just don't shut down.

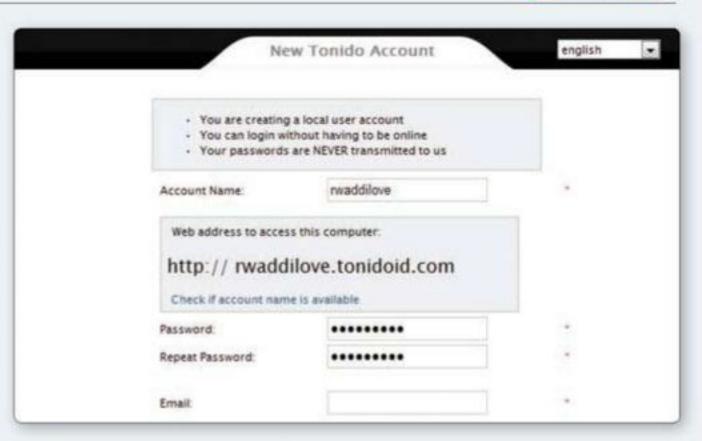


You'll see the same screen that we saw in Step 4, offering you full access to the PC's internal hard disk and any other attached drives. An Upload button lets you add files, while the Actions column enables you to download files.



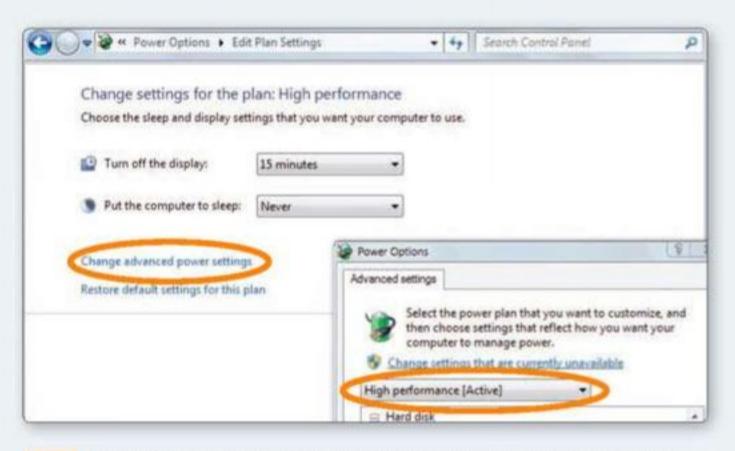


Open the zip file that's downloaded to your PC. Drag out the Tonido folder and drop it on to the desktop. Double-click the tonido.exe setup file to begin the installation. A Windows Firewall alert will pop up; click Allow access.



You'll also need to sign up for a free Tonido account.

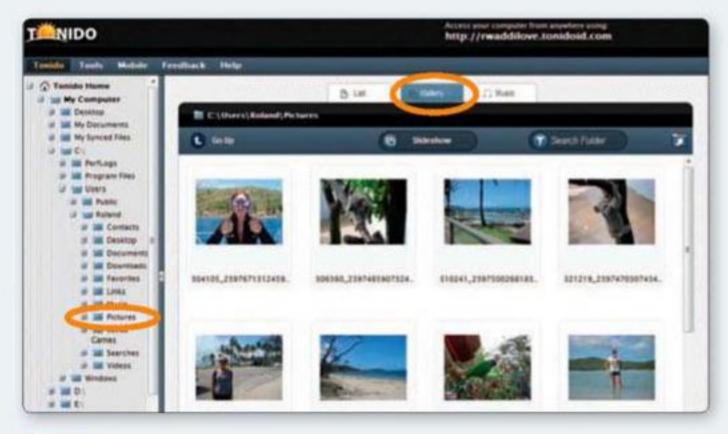
Enter your details in the fields provided, including an account name and password. The account name will become part of the URL used to access your cloud server.



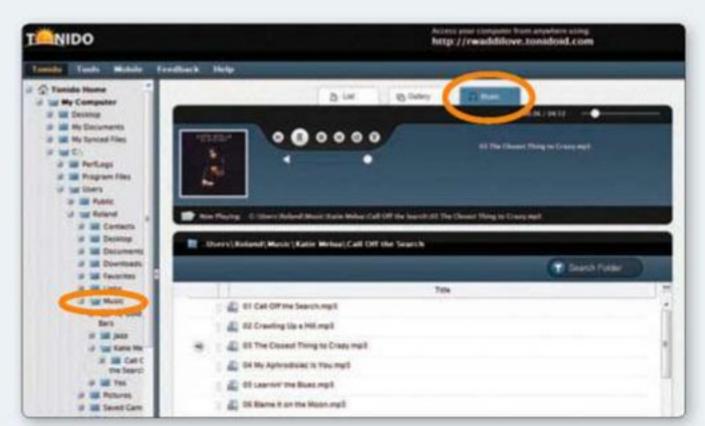
Since your PC will be left switched on, you'll want to ensure it's energy-efficient. Open Control Panel, Power Options and select High performance. Click 'Change plan settings', then 'Change advanced power settings'. Set the display and disk to sleep when idle.



You can log into your computer, which is now acting as a cloud server, from any computer or device with an active internet connection and a web browser. Simply enter your personal Tonido URL: <your account name>.tonidoid.com.



Navigate to the Pictures folder on your hard disk and select the Gallery tab at the top. The photos are shown as thumbnail images. Click a photo to view a larger version or press the slideshow button and sit back and watch.



Use the left panel to find the Music folder on your computer and select a folder containing digital audio, such as MP3 files. Switch to the Music tab at the top and music controls are displayed. Pick and play a track.

USE TONIDO WITH MOBILE DEVICES

Tonido offers excellent support for a wide range of mobile devices. A free app for iOS lets you access your cloud server from an iPhone, iPad or iPod touch; there are also free apps for Android, Windows Phone and BlackBerry phones and tablets.

The apps are available in each platform's app store, such as Apple's App Store and Android's Google Play, where

you can use the search facility to quickly locate them. Alternatively, the apps are available on the Tonido website - head to tinyurl.com/cqnbfp9.

The features available depend on the capabilities of your individual device and its operating system. For example, the iOS app has limited access to an iPad or iPhone's system and storage.

The Android app, on the other hand, can access all the files on the device, and you can upload and download anything.

All the apps are able to play music and view files that are stored on your cloud PC, upload photos and so on.

In the following walkthrough, we'll explain how to use the Tonido Android app on a smartphone or tablet.

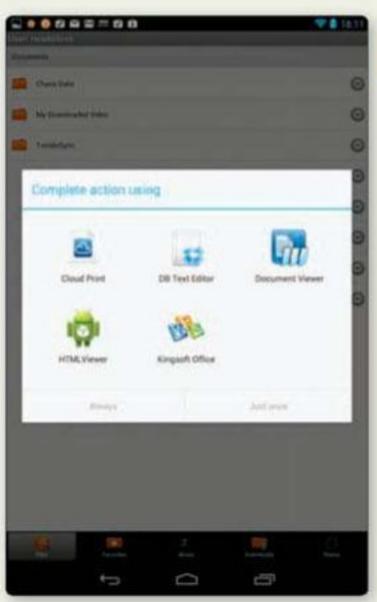
2



on your Android smartphone or tablet and use the Search facility to find Tonido. Click the Install button, then 'Accept & download' to download the app. Exit Google Play and tap the Tonido icon to launch the app.



Access to your cloud server is password-protected, so you'll need to enter the server, account name and password to log in. The server is the URL you use to access your account on a PC: http://<your account name>. tonidoid.com.
Tap Login.



The app will display the accessible files and folders on your cloud PC. What happens when you tap an individual file will depend on what apps you have installed on your device. With the necessary apps, you'll be able to view, edit and print files.



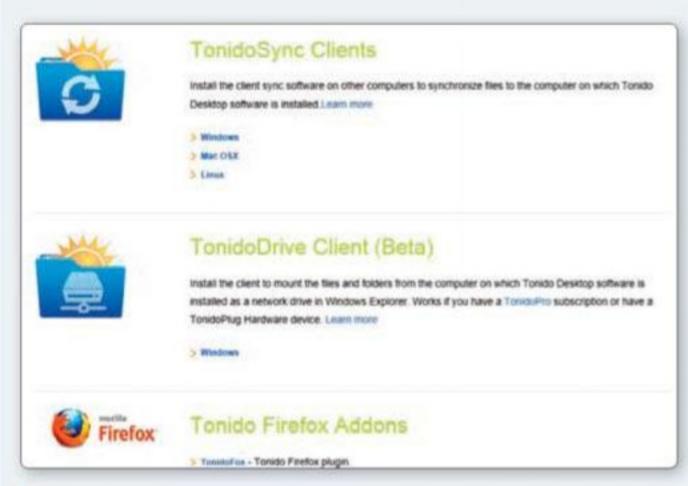
Browse to the
Music folder on
your cloud PC and
you'll be able to
select any MP3 file
by tapping it. The
music player will
appear onscreen,
along with controls
to pause, play, stop
and skip tracks.

SHARE AND SYNC FILES

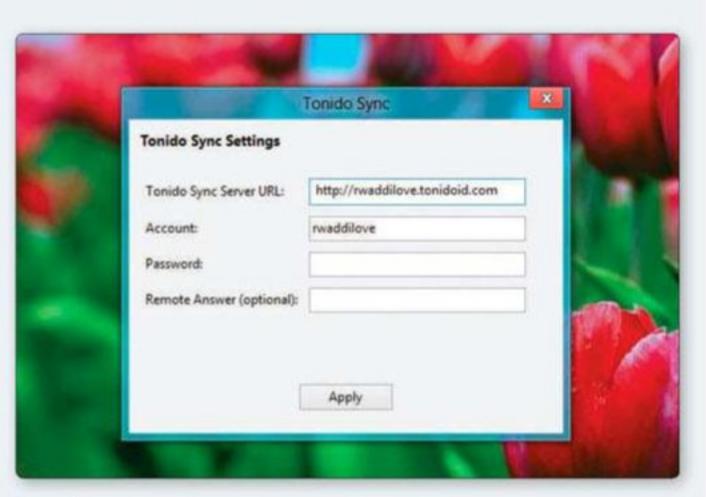
One possible use for a cloud server is to ensure your files are synchronised across your devices. For example, you might want to ensure you always have the latest version of a document whether you're working at home or in the office. Sharing and synching files with Tonido is simple.

Fire up a web browser and log into Tonido. Find 'My Shared Files' and 'My Synced Files' in the left panel. Select 'My Synced Files' to open a TonidoSync folder in your cloud PC's Documents folder.

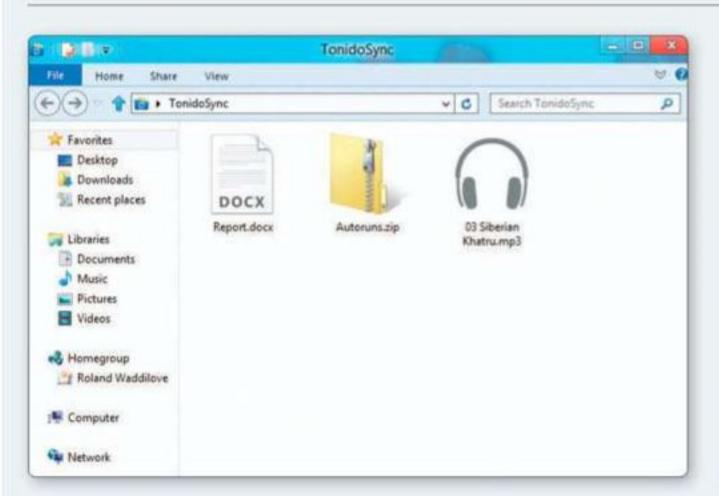
Download and install TonidoSync Client on any other computer and it will create an identical TonidoSync folder in the Documents folder. The files stored on the cloud PC are automatically downloaded and kept in sync. This is ideal if you use two or more PCs, such as at work and at home, or if you want to share files between computers on your home network. Note that deleting a file on one PC will automatically delete it on the other (synchronisation is not backup). However, deleting a file in Explorer only sends it to the Recycle Bin, so recovery may be possible.



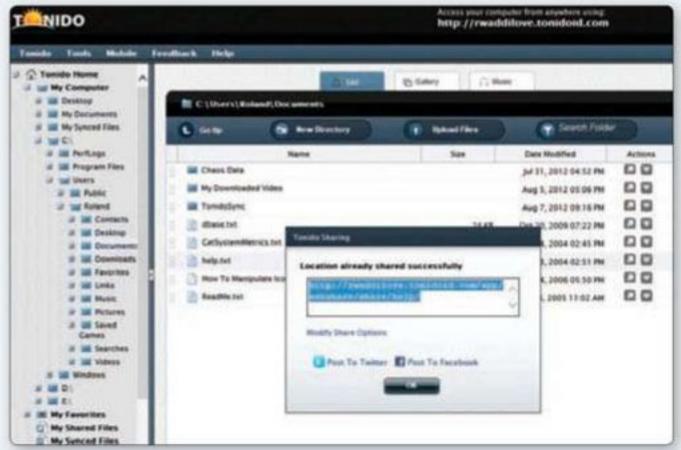
Head to tonido.com on the PC on which you want to create a sync folder, then click Downloads. Scroll down to the TonidoSync Clients, then download the software, appropriate to your PC's operating system.



Double-click the downloaded setup file to install Tonido Sync. The program will prompt you to enter your Tonido server URL, account name and password. Ignore the Remote Answer box, which is optional. Click Apply.



The software creates a folder called TonidoSync in your Documents folder. An identical folder is found on the computer running Tonido, with the contents of the two kept in sync. Use this folder to share files between your computers.



Your files are private and secure by default, but it is possible to make them public. Log into the cloud PC via a web browser and click the Share icon in the Actions column. You can give the returned link to anyone who needs to access the file.

Build a small business website with Moonfruit



Get a professional web presence with minimal effort. Martyn Casserly explains how to build your own business website using Moonfruit



Once upon a time, an enterprising small business would have sought out a prominent location in the high street, or liveried up its vans to create a visual presence for potential customers. Today, customers expect you to have a website. If you don't have a digital shop window, you're missing out on custom.

Even if you don't know your SQL from your elbow, help is at hand. Moonfruit provides everything you require to create websites, without the need for coding or design experience. Its template-based options allow you to assemble and customise a professional-looking website in a short space of time, with nary a whisper of HTML or PHP.

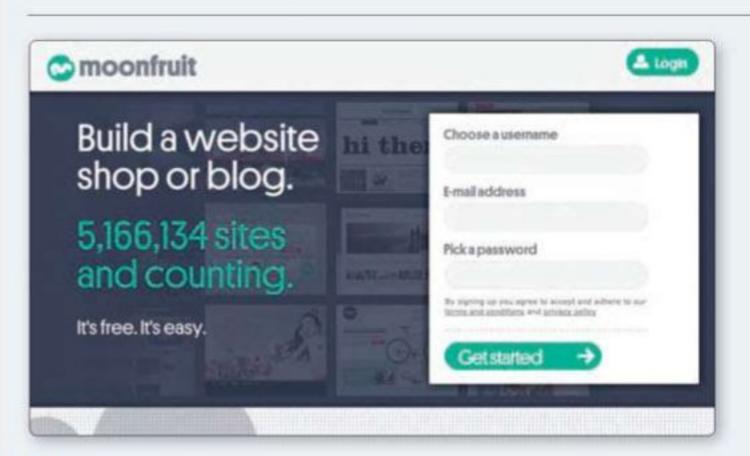
One of the key features it includes for businesses making the transition to the web is a built-in shop. This allows you to accept payments via PayPal and promote your products on social-media sites. The shop is highly configurable, and many of the templates help

showcase what you have to offer. Best of all, there are no shop-specific fees to detract from your profits.

The rising popularity of mobile devices was once bad news for web designers, since shrinking their beautiful creations to fit on a 4in screen was difficult. This isn't a problem with Moonfruit, which automatically adjusts your site to suit a smartphone or tablet's smaller screen. This means you can concentrate on the words and images, leaving the technical stuff to those who know what they're doing.

A 15-day free trial lets you take a no-risk practice run at building an online empire. When this ends, Moonfruit allows you to maintain a small site free. Those with grander plans can sign up for a paid-for package, with prices starting at £4 per month. The top-of-the-range £25-per-month plan offers mobile-optimised checkouts, 10GB of storage and unlimited bandwidth. Here's how to get started.

GET STARTED WITH MOONFRUIT

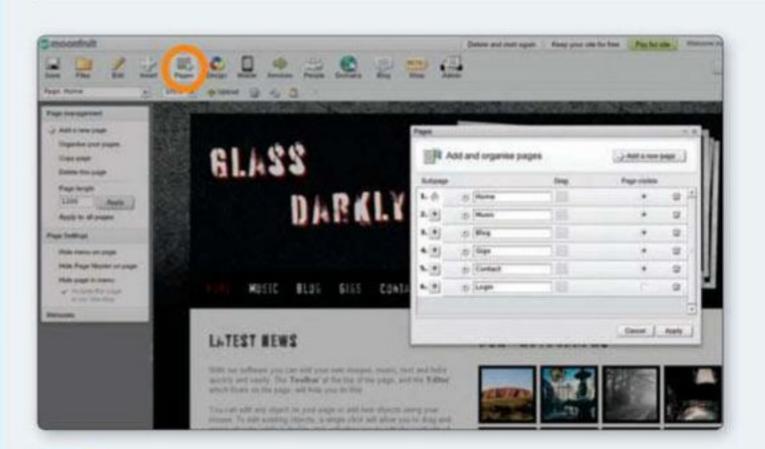


START

Browse to moonfruit.com and fill in the form to create an account. You'll need to enter a username, email address and password, then click Get started. You can now get stuck into building your business website.



It's time to begin customising your website. A useful tool is the Editor pop-up box; use its drop-down menu to select the element on your page you wish to edit, for example square 2 or title 3. The relevant element will be highlighted onscreen.



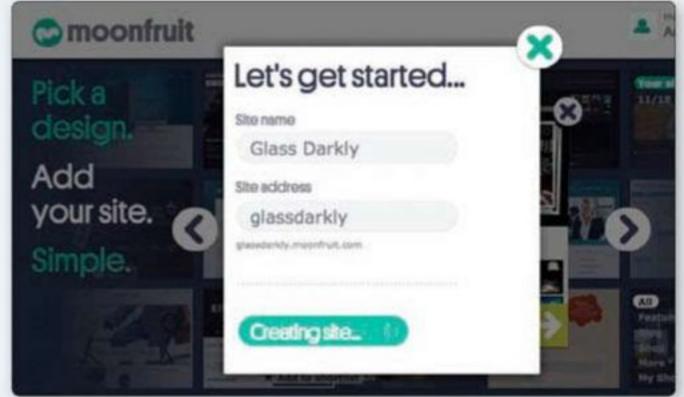
An important consideration is how many pages your website will have. To change the shortcuts to each page click Pages in the toolbar and choose Organise Pages in the menu that appears. Here you can reorder, rename, add or delete pages.



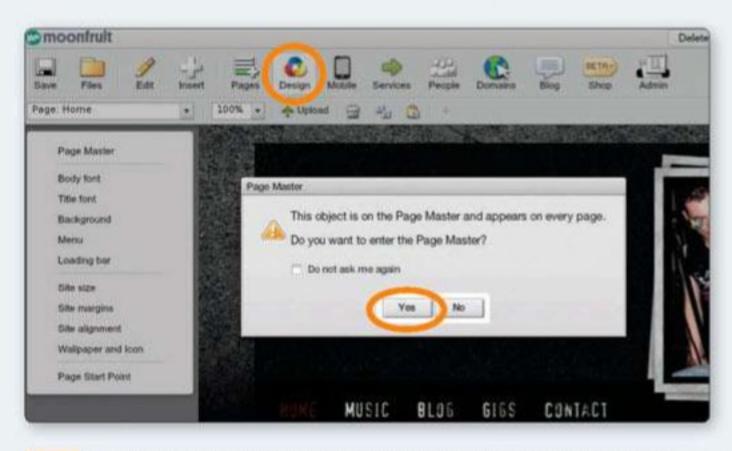




Choose a template for the layout of your site. You can change this later, so feel free to experiment. Hover the mouse cursor over a design to highlight it, select the plus icon for more details, then choose 'Click to build' if you like what you see.



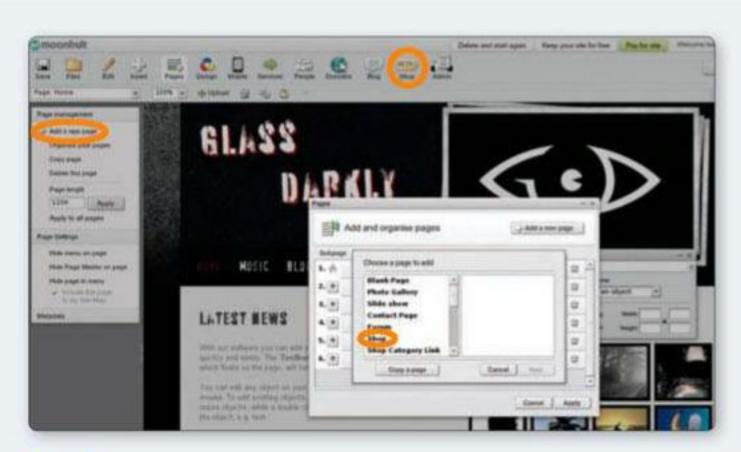
Moonfruit will prompt you to choose a name for your site and a site address. You don't need to own or buy a domain - the address you enter will be prefixed to '.moonfruit.com', for example glassdarkly.moonfruit.com.



To change the main logo and heading you'll need to use the Page Master function. This is found by clicking the header and clicking Yes in the pop-up box. Additional tools are available by clicking Design in the toolbar.



To change the title simply double-click the text and enter your new copy. You can format the text using the Font tab in the Editor box. To alter an image you must first click on it, then select Style in the Editor box and click 'Choose an image'.



To add a shop to your website click 'Add new page' and select Shop from the list. A drop-down menu offers various product types that you can add or edit. Click Shop in the toolbar to enter your payment and delivery details.



Moonfruit automatically detects which device is being used to access the site and adjusts the site accordingly. You can preview the site on a mobile device simply by browsing to the address you entered in step 3.

Make your mark on Google Maps



Mike Bedford explains how to customise Google Maps to include personalised information about your business or event, then embed it in a webpage



Google Earth and Maps have revolutionised mapping. Whether you want to get directions for travel by car, bicycle or foot, identify your destination by investigating the locale in Street View, or take a virtual tour of some far-flung corner of the globe via satellite imagery or a 3D view, these and lots of other options are at your fingertips.

But online mapping isn't only about accessing the information others have provided. No doubt you'll have seen websites that include a small portion of Google Maps, which displays the location of their office and extra information.

You, too, can customise Google Maps, then provide friends or business colleagues with a link to a particular map or embed it in a webpage. You can also choose to make your map public, allowing search engines to find it and adding it to your Google profile.

You can include on your map addresses, walking or driving routes, and shapes,

such as the extent of a park or woodland. Each can be annotated with textual information and photographs, which will pop up when the location marker, route or shape is clicked.

The applications are limited only by your imagination. Perhaps you're organising a charity run and want to provide runners with the start and finish points and information about the route. A customised Google Map is exactly what you need.

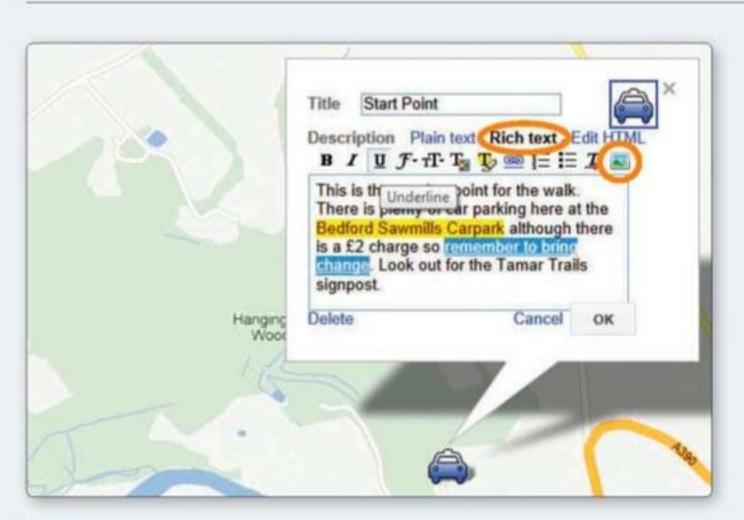
Similarly, a personalised map can come in handy for party or wedding invitations, informing people that you've moved house, helping customers find your office or shop, providing details of a school or college field trip, and so much more.

Here, we'll show you how to create your own Google Maps. If you haven't already done so, you'll need to sign up for a free Google account. Head to maps.google.co.uk, click 'Sign in' in the top right corner, then 'Sign up'.

CUSTOMISE GOOGLE MAPS



Launch Google Maps and click My Places, Create Map. Enter a meaningful title and description in the relevant fields, then specify whether the map should be Public or Unlisted, depending on whom you want to be able to gain access.



You can edit any object by clicking it to display the pop-up. Choose 'Rich text' to bring up formatting tools similar to those found in Word, but note that not all formatting previews correctly during editing. You'll even find the means to add a photo.

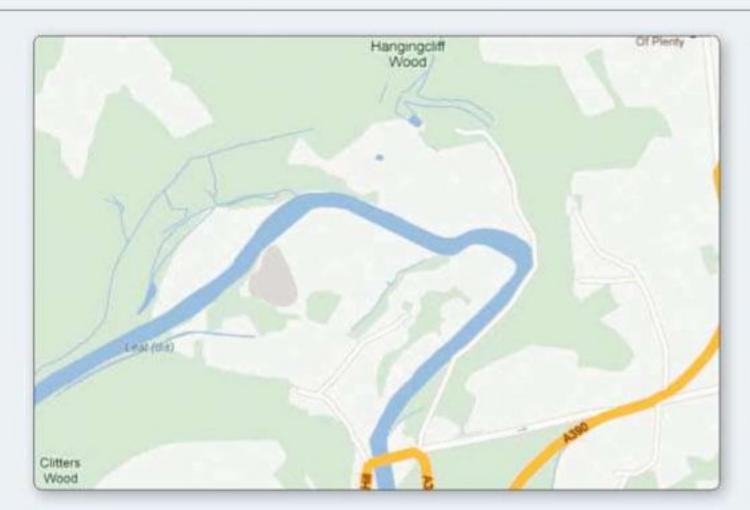
EMBED YOUR MAP IN A WEBPAGE

In Step 6 of our walkthrough we clicked the chain link icon to reveal a URL to our map. Below the URL returned is some HTML code, which can be pasted into a website to embed the map. We'll take this one step further by customising the code, allowing us to define exactly how the map will display on our webpage.

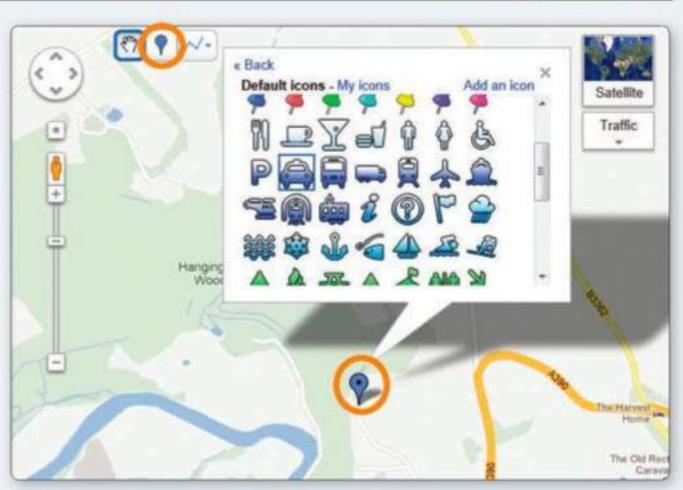
Click 'Customise and preview embedded map', which is directly below the HTML code in the pop-up. A new window will appear that shows how your embedded map will look on a webpage.

Perhaps the most important consideration is how large the map should display - you'll notice that you can choose between small,

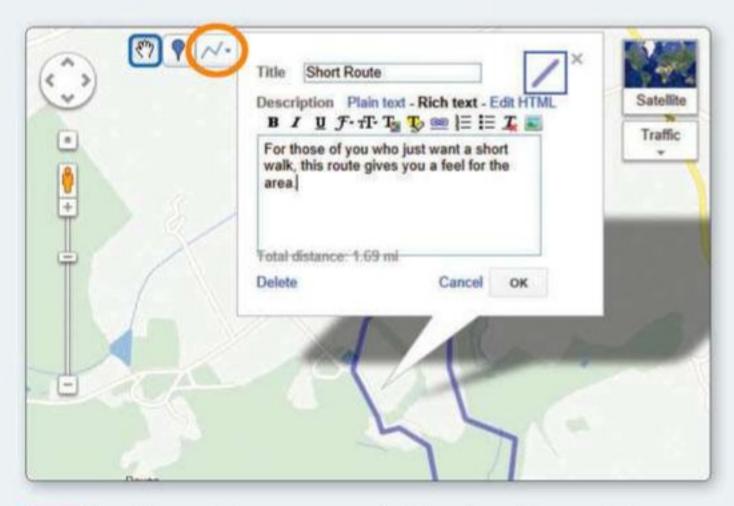




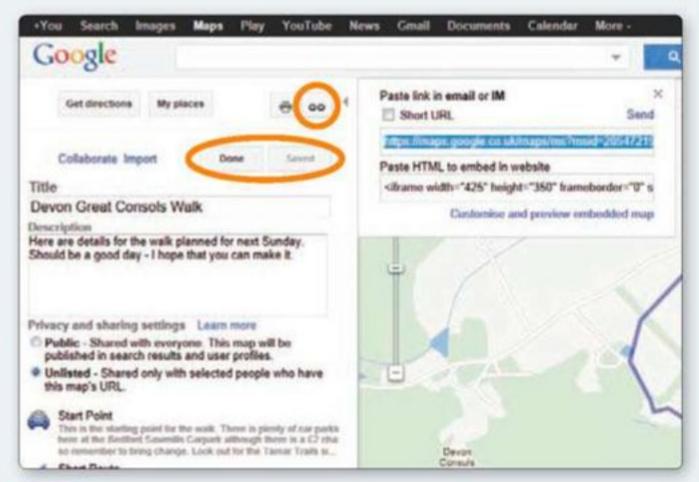
It's still possible for visitors to zoom and pan customised maps as they would with standard Google Maps, but you'll probably want to specify your map's default display. Navigate to the location and zoom in to show the area of interest.



To include a location, click the blue pushpin icon at the top of the map, then click on the map where it should appear. Enter a title and a description in the pop-up. Click the icon in the corner of the pop-up to change the marker's appearance. Click Ok.



To add a route to your map, click the zigzag icon and choose 'Draw a Line'. Click on the map to define start and waypoints, then double-click to place an end point. The pop-up window will appear as before; use this to add a title and description.



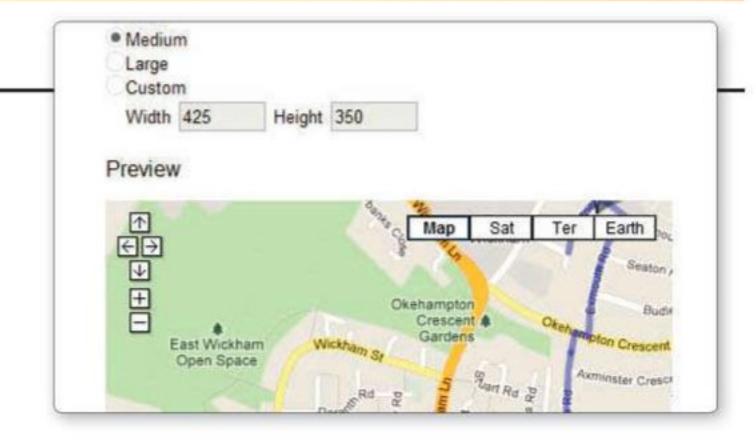
Click Save when you've finished your map. Click the chain link icon to reveal a URL for your map. This can be included in an email to friends or colleagues or included in a webpage.

If you'd prefer to embed the map in a website, see below.

medium, large and custom. Both preview and HTML code will change with each tweak you make.

Buttons at the top of your customised map let you choose whether to display your data on a map with or without terrain, a satellite image, or a Google Earth-type 3D display. You can also refine the zooming and panning controls.

When you're happy with the way your map displays in the preview window, simply copy the HTML code (select it and press Ctrl, C) and paste (Ctrl, V) it into your webpage, to your Facebook profile or anywhere else that allows HTML code.



Speedy shortcuts in Microsoft Word



Sandra Vogel recommends some of her favourite time-saving tips and tricks in Microsoft Word to help you become more productive



We use PCs for a huge range of tasks, but just about everyone uses a word processor on a regular basis. Whether it's to write a report, a dissertation, that novel you're working on, or a business plan, all of us can benefit from learning the many shortcuts and tricks for getting things done quicker in Microsoft Word.

From basic shortcuts that everyone should know to more advanced features, such as tracking changes when you're collaborating on a document, you're sure to find something here invaluable.

You might find our list includes a few tips you already use, but we hope everyone finds at least one trick that saves them time.

Common shortcuts

DID YOU KNOW You don't
have to select or highlight
a word to apply formatting?

Simply place the cursor in the

word and hit **Ctrl**, **B** to make it bold, for example.

Here are some shortcuts you'll want to use to save time:

- Ctrl, Z Undo
- Ctrl, X Cut
- Ctrl, C Copy
- Ctrl, V Paste
- Ctrl, A Select all
- Ctrl, Shift, C Copy formatting of selected text
- Ctrl, Shift, V Paste formatting to selected text
- Ctrl, L Align text left
- · Ctrl, F Find
- Ctrl, H Find and replace
- Ctrl, P Print document
- Ctrl, Shift, . Enlarge font size for selected text
- Ctrl, Shift, , Decrease font size for selected text
- Ctrl, Shift, N Applies the Normal style to selection
- Ctrl, Backspace Delete previous word
- Ctrl, + Navigate through text one word at a time

SAVE TIME IN MICROSOFT WORD



START

Use keyboard shortcuts. If you tend to use the mouse for everything, from making text bold to opening and saving documents, learning shortcuts will save time. Try Ctrl, B for bold and F12 for Save As. See tinyurl.com/3hoodxh for more.



Use and customise AutoCorrect. Word can automatically correct words you continually type wrong. Go to File, Options, 'Proofing and AutoCorrect Options'. Use the 'Replace Text as you Type' box to set up personalised auto corrections.



Customise the Ribbon. The Ribbon interface hasn't been universally welcomed by Office users, but customising it may help you to find what you need. Choose File, Options, Customise Ribbon. You can also customise the Quick Access toolbar.



Master F4. F4 is a really useful Keyboard shortcut. It repeats the last COMMAND you issued. So if you've just deleted a line, move to a new point in a DOCUMENT and use F4 to delete that line. If you've just chosen a font style, SELECT A NEW AREA and USE F4 to apply it there too.

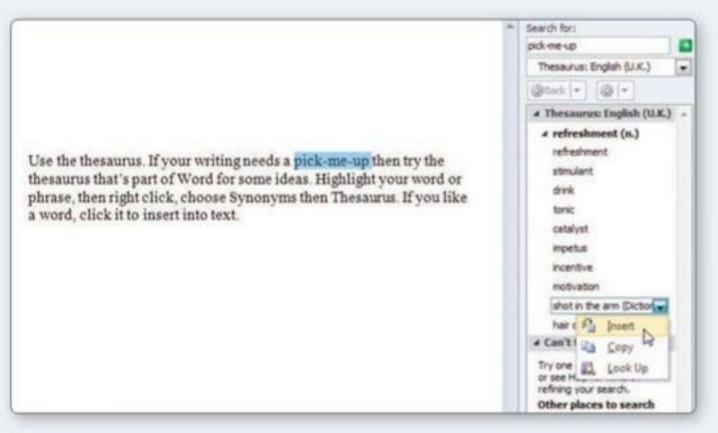
Master F4. The F4 button repeats the last command you issued. If you've just deleted a line, you can move to a new point in the document and use F4 to delete that line. If you've just chosen a font style, select a new area and use F4 to apply it again.

The Poison Pen 12, The Gables, Hamptonshire, Suffolk Tel: 01234 567 8900

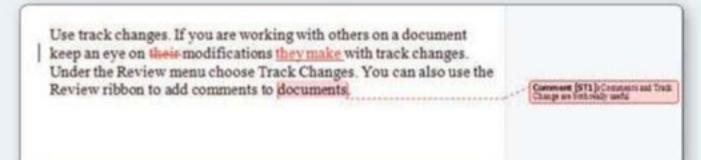
DATE

Dear

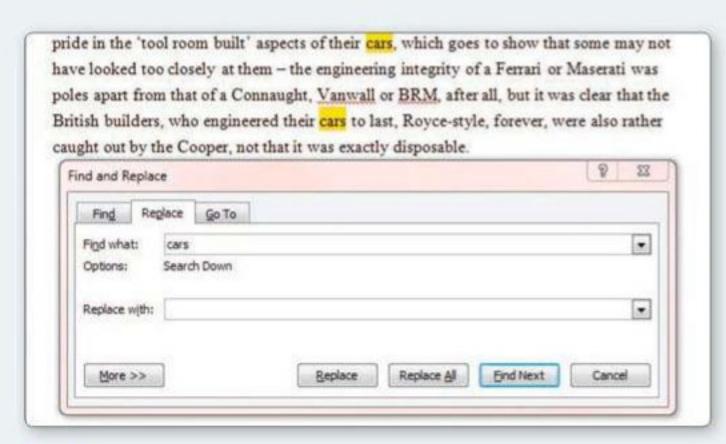
Make templates. If you frequently write letters, create a letterhead template. Templates save you from having to retype the same text time and time again. Make a folder in which you can store templates for all the various documents you create.



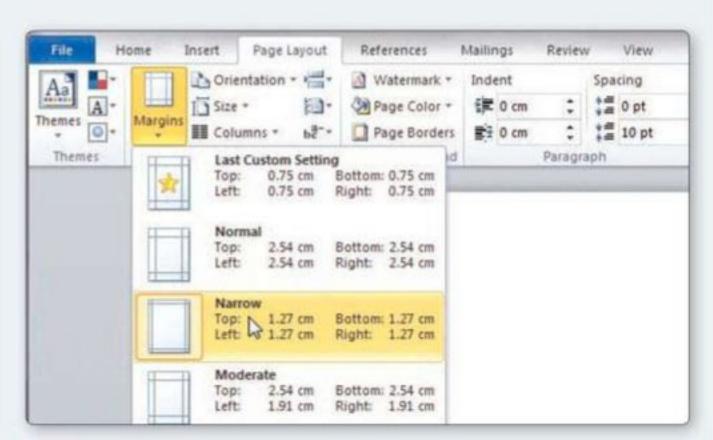
Use the Thesaurus. If you've used the same word several times or simply want to find a term that better describes what you mean, look to Word's built-in Thesaurus for advice. Highlight and right-click a word or phrase, then choose Synonyms, Thesaurus.



Track Changes. If you're collaborating on a document with colleagues, you can keep an eye on their modifications using Track Changes. Click Review, Track Changes. You can also use the Review menu to add comments to documents.



Speedy editing. If you need to quickly find a word or phrase in a document, click Home, Editing, Find. Enter your search term and click Find Next. Use Replace to change all instances of a word or phrase to whatever you specify in the Replace with field.



Tweak margins. If you need to fit the entire document on to a single sheet of paper and it's just too long, tweaking the paper margins may fix your problem. Click Page Layout, Margins and try the preset Narrow margins or specify a custom size.

Extend your home internet connection



Martyn Casserly explains how to extend a single internet connection to all rooms of the house through your mains wiring. Here's how to get started with powerline



Wi-Fi is a fantastic utility
that allows us to roam free in
our homes with laptop held
triumphantly aloft, but it's
functional only so far as your
router's signal. Chances are
you won't be able to connect
in the back bedroom, with
its sturdy walls serving as
frustrating barriers.

Save ripping down the walls for a modern open-plan interior, powerline adaptors (also known as HomePlug) offer an effective workaround.

Rather than laboriously running ethernet trip wires from room to room, powerline technology lets you create an internet network using the existing mains electrical wiring in your home or office.

One adaptor is plugged into a mains socket next to your router, with the two connected using an ethernet cable; the second is plugged into a wall socket elsewhere in the home. Depending on your choice of adaptor, you'll either be able to hook up a PC via an ethernet cable, or connect to the Wi-Fi network it can create. This is ideal for use with tablets, smartphones and any other wireless kit that lacks an ethernet port.

We've used a pair of standard HomePlug AV adaptors for this walkthrough, which run at a nominal 200 megabits per second (Mbps). In real terms, these perform at around 70Mbps. Various other options are available, including 500Mbps and even gigabit (1Gbps). Where Wi-Fi is built in, look for 802.11n.

For general email, browsing and social networking use, HomePlug AV adaptors are more than capable. If you intend to stream lots of HD movies or transfer large files to a NAS drive, however, the faster adaptors will prove a more sensible choice.

The modular nature of HomePlug means that it's possible to mix and match the devices – as we'll demonstrate in our walkthrough. Note that the connection speed will be limited to that of the slowest adaptor. Avoid the cheaper HomePlug 1.0 adaptors, running at 85Mbps, since these aren't compatible with the faster versions.

You can buy starter kits such as the one used here for as little as £30 online, which is a reasonable exchange for a room full of internet.

GET STARTED WITH POWERLINE ADAPTORS



On the assumption that you have two matching powerline adaptors, plug one into a mains socket and turn it on. Avoid plugging the adaptor into an extension lead or surge protector, since these can interfere with its signal.



As before, connect one end of an ethernet cable to the powerline adaptor, and the other to your laptop, desktop, media player or games console. Now turn on the adaptor. That's most of the physical work done.

SETTING UP A WI-FI ADAPTOR

If you need to extend wireless- rather than wired internet access to a room in which your router's Wi-Fi signal doesn't reach, a wireless HomePlug adaptor (also called a wireless extender) is the answer.

The setup process is not dissimilar to that of configuring a router, which isn't surprising, given that a powerline network adaptor with Wi-Fi is in essence a mini wireless router.

It creates a new wireless network that connects to your router via your mains wiring just like any other powerline adaptor.

The type of the adaptor you choose will determine the capabilities of the new network, and it's worth opting for an

Tech Help



Connect one end of an ethernet cable to the corresponding socket on the adaptor, and the other end to your router. If it isn't obvious which port you should use, these are usually marked in yellow and carry a symbol comprising three squares joined by lines.



Plug your second powerline adaptor into a mains socket in the room into which you want to extend your home network. Remember to place the adaptor in a socket close to your computer or networking device.



The adaptors should automatically pair with each other; if not, hold down for a few seconds the small button on the bottom of one device, then repeat the process on the other. This also enables 128bit AES encryption.



It's relatively easy to add another adaptor, even one from a different manufacturer. We connected a Solwise 200Mbps device to our laptop via ethernet, then pressed the button on the device. Seconds later it was connected to our network.

802.11n- rather than 802.11g-specified version. Note that there's little point in buying a wireless extender that supports 500Mbps or 1Gbps if your existing adaptors run at only 200Mbps.

Once you've installed the configuration software and connected (via ethernet) to the adaptor, you should be guided through the process of naming the new Wi-Fi network, enabling WPA2 security and, in some cases, changing the channel frequencies to compensate for any interference you might encounter.

When complete, you'll simply need to enter into your various devices the new wireless network details.



December 2012 www.pcadvisor.co.uk/how-to 119





Ashampoo UnInstaller 4.0

FULL PROGRAM

ONLINE REGISTRATION REQUIRED

Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files 209\
Ashampoo UnInstaller 4
and open the install file

Online registration required: follow the links during installation.

System requirements Windows XP/Vista/7/8; 512MB RAM; 20MB drive space; 1024x768 screen

resolution, 256 colours

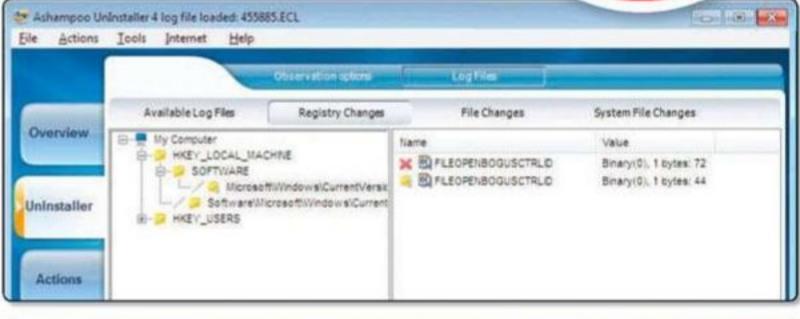
Windows gets slower the more you use it. One reason for this is that many uninstalled programs leave behind a load of digital garbage. Each time you try out a new program and then uninstall it, your system gets more and more clogged up with redundant data, and this can really slow things down.

Ashampoo UnInstaller 4.0 eliminates this problem, by ensuring no traces of an uninstalled program are left on your machine. This is achieved by comparing before and after system snapshots. Uninstalling a program with Ashampoo is completely safe, with automatic backups and a Reinstaller should you later change your mind.

UnInstaller's comprehensive before and after snapshots can also be used to monitor and identify the secret behaviour of a given program, hidden files and Registry keys. You take a snapshot, then run the program you want to monitor, and then take another snapshot. UnInstaller compares the two and alerts you to any changes made.

UnInstaller 4.0 is a complete
Windows maintenance package,
with more than a dozen powerful
tools. It comes with an advanced
hard-disk defragmenter, a file wiper,
a file undeleter, an internet cleaner,
a Windows Registry cleaner, a
Windows System Restore point
manager, file and folder backup
and much more.







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Abelssoft AntiBrowserSpy

FULL PROGRAM

ONLINE REGISTRATION REQUIRED

Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files
209\Abelssoft
AntiBrowserSpy and
open the install file

Online registration required: follow the links during installation.

System requirements Windows XP/Vista/7/8; .Net Framework 2.0; web connection AntiBrowserSpy prevents your web browser from returning data to its creator, whether that's a unique ID or details of the websites you visit. AntiBrowserSpy can also remove traces of your internet activity and perform a backup of your settings.

Features

. Switch off spy functionality:

More and more software vendors are integrating to their browsers the ability to return your private data; AntiBrowserSpy aims to put a stop to this once and for all

Remove internet traces:

AntiBrowserSpy allows you to remove all traces of your internet activity, including your browsing history, web cache and download lists. A cookie manager also lets you view and protect cookies



 Create backups of your browser settings: Create a backup of your browser settings that includes your bookmarks and other data

ONLINE

REGISTRATION

 Auto-Cleanup: AntiBrowserSpy lets you schedule cleanups, backups and all main functions at a time to suit you ☒

Diskeeper Home 12.0

FULL PROGRAM (THREE-MONTH LICENCE)

Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files 209\
Diskeeper Home 12 and
open the install file

Online registration required: follow the links during installation.

System requirements

Windows tablet; Windows XP/Vista/7; 60MB drive space Diskeeper 12.0 keeps your PCs and servers running like new, extending their useful life

Many of us have experienced the frustration associated with a Windows computer that becomes progressively slower. Diskeeper, with its proactive IntelliWrite technology, prevents files fragmenting at the Windows level, so you get maximum system- and application performance.

Files are written in pieces and scattered around the disk, resulting in wasted system resources and the accumulation of I/O bottlenecks. IntelliWrite aims to prevent this fragmentation by contiguously writing files to the disk.

Diskeeper can maintain performance on even the largest and busiest systems.

 Keeps your servers, storage and applications running like new



Diskeeper

- Ensures Microsoft applications work at top speed
- Improves PC, workstation and server performance
- Helps reclaim free space on your hard disk(s)
- Can be centrally managed by an admin ☒

Reallusion Crazy Talk 6.0 Special Edition

FULL PROGRAM

ONLINE REGISTRATION REQUIRED

Installation details

Go to My Computer.

Right-click the disc icon and open the disc. Select Files 209\

CrazyTalk 6 Special Edition and open the install file

Online registration required: follow the links during installation.

System requirements

Dual-core CPU; Windows XP/Vista/7; 1GB RAM; 2GB drive space CrazyTalk 6.0 generates real-time dialogue sequences, with multiple actor animations, realistic eye movements and auto face fitting. Its remarkably simple imagetransformation process converts any 2D image into an animated digital actor within minutes.

Quickly design and animate talking avatars for use in any commercial or personal web page, video project or social network.

CrazyTalk 6.0 delivers the ultimate solution for today's digital content creators who are looking to add a virtual host, product pitchman or digital actor to their movies, video projects and websites.



McAfee Total Protection 2013

FULL PROGRAM (THREE-MONTH LICENCE)

ONLINE REGISTRATION REQUIRED

Installation details
Go to My Computer.
Right-click the disc
icon and open the
disc. Select Files 209\
McAfee Total Protection
2013 and open the

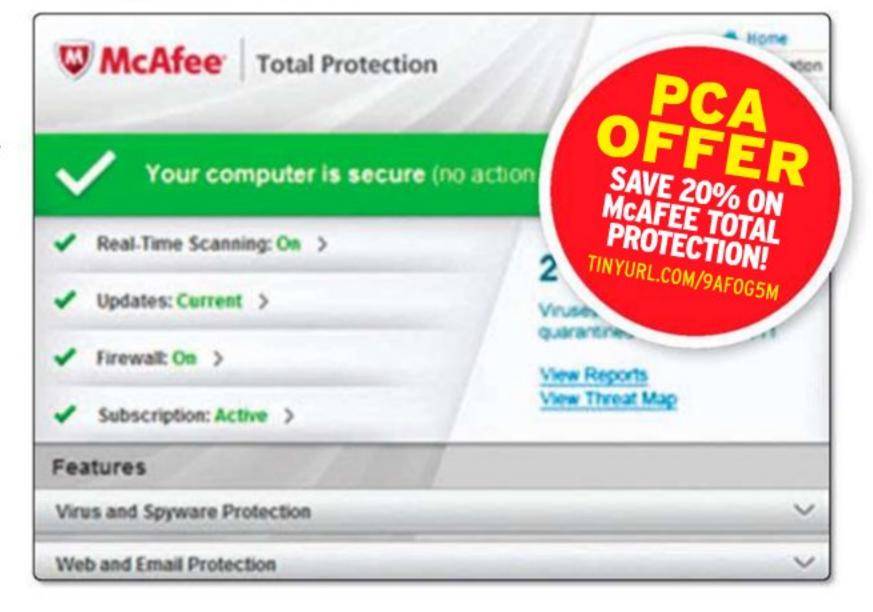
Online registration required: head to tinyurl.com/8n8b5xe. Expires 30 Oct 2012.

install file

System requirements

1GHz CPU; Windows XP/ Vista/Windows 7; 1GB RAM; 500MB drive space You want to enjoy the benefits of connecting, surfing and shopping online, without worrying about the security risks. McAfee lives and breathes digital security, relentlessly working to stay several steps ahead of the bad guys. Every second of every day, it focuses on one thing: keeping your digital life safe.

Secure your online world with Total Protection, powerful antivirus and online threat protection. You'll be covered with real-time antivirus, antimalware, spam filters, a firewall and parental controls. And you'll get protection against identity theft, social-media threats and hackers. It's more than total protection; it's total peace of mind.



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Tablet World 2

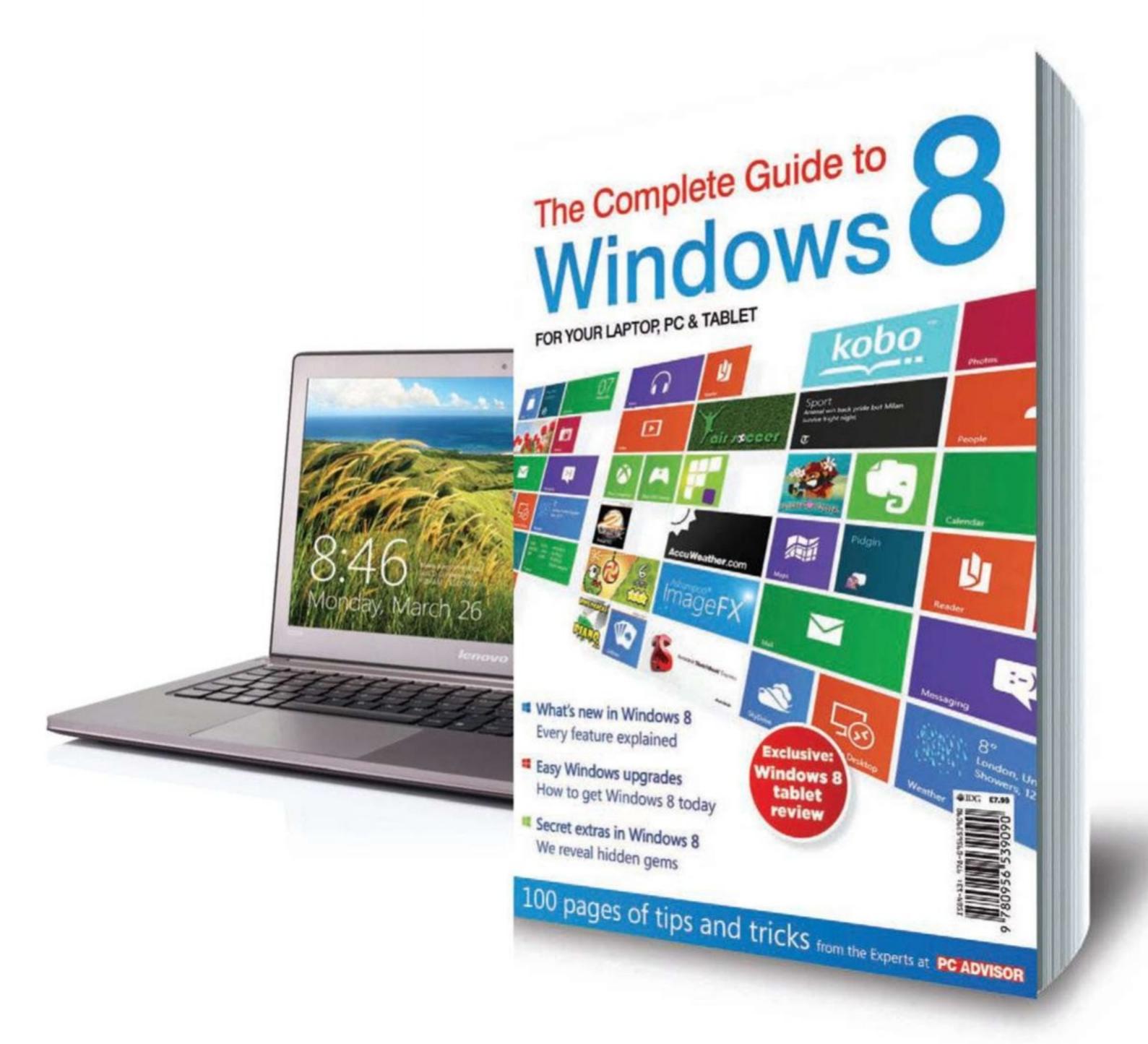
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*Limited stock available





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Also available in digital format via Zinio



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Ultraportable laptops



Laptops



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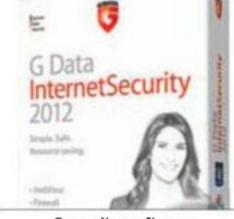
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Security software



Printers



Blu-ray drives



Wireless routers











Prices

Laptops Laptops up to £500 £501 to £1,000 £1,001 and over

Printers Printers under £150 £151 and over

Graphics cards Graphics cards under £150 £151 and over

Flat-panels Flat-panels under £200 £201 and over

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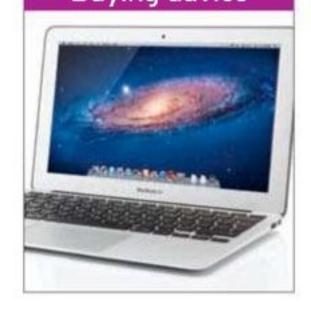
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Ultraportable laptops	PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	- Calumnanian	5
	Apple MacBook Air 11in	Samsung 900X4C	Asus Zenbook UX31E-DH53	Toshiba Satellite Z830-10U	HP Envy Ultrabook 6-1010ea
Price	£849 inc VAT	£1,299 inc VAT	£999 inc VAT	£899 inc VAT	£699 inc VAT
Website	Apple.com/uk	Samsung.com/uk	Uk.asus.com	Toshiba.co.uk	Hp.com/uk
Build rating	****	****	****	***	***
Features rating	****	****	****	****	***
Performance rating	****	****	****	****	***
Value rating	***	***	****	****	***
Overall rating	****	****	****	****	***
Processor	1.7GHz Intel Core i5-3317U	1.7GHz Intel Core i5-3317U	1.8GHz Intel Core i7-2677M	1.6GHz Intel Core i5-2467M	1.7GHz Intel Core i5-3317U
RAM	2GB DDR3	8GB DDR3	4GB DDR3	6GB DDR3	4GB DDR3
Storage	64GB SSD	128GB SSD	256GB SSD	128GB SSD	500GB hard drive
Screen size	11.6in	15in	13.3in	14in	15.6in
Screen resolution	1366x768 pixels	1600x900	1600x900	1366x768 pixels	1366x768 pixels
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 3000	Intel HD Graphics 3000	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	802.11b/g/n	802.11a/b/g/n	802.11a/b/g/n
Ethernet	100Mbps with USB adaptor	Gigabit	N/A	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0, 1x USB 2.0	1x USB 3.0, 1x USB 2.0	1x USB 3.0, 2x USB 2.0	2x USB 3.0, 1x USB 2.0
FireWire	×	×	×	×	×
Thunderbolt	✓	×	×	×	×
DisplayPort	✓	×	×	×	×
HDMI	×	✓ (Micro HDMI)	✓	✓	✓
DVI	×	×	×	×	×
VGA	×	×	✓	✓	×
eSATA	×	×	*	*	*
Media card slot	×	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Speakers, headphone jack	Speakers, headphone jack
Optical drive	N/A	N/A	N/A	N/A	N/A
Extras	HD webcam, multitouch trackpad, backlit keyboard	Webcam	Webcam	Webcam	Webcam, Kensington lock slot
Operating system	Mac OS X 10.7 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	Samsung Recovery Solution	None	None	None
Fear (Max detail)	28fps	28	Not tested	16fps	20fps
Battery	35Wh lithium-ion	62Wh lithium-ion	50Wh lithium polymer	46Wh lithium-ion	59Wh lithium-ion
Battery life	6 hrs 10 mins	8 hrs 3 mins	7 hrs 17 mins	6 hrs 10 mins	7 hrs 6 mins
WorldBench 6 score	129	125	119	106	112
Dimensions	300x192x3-17mm	375x237x15mm	326x223x18.1mm	316x227x16mm	374x253x20.5mm
Weight	1.07kg	1.67kg	1.4kg	1.09kg	2.07kg
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	Reasonable price tag Very light and compact Strong performance for size Good graphics Great build quality	Sleek and stylish Good matt screen Comparatively fast Great battery life Lots of memory	Superb design Nice range of connectors Impressive battery life MacBook Air is faster and has a better display	Highly portable Rather fragile Poor gaming speed Usable keyboard Only 128GB storage	Good-looking laptop Decent sound quality Slow processor Poor gaming option Reflective screen
FULL REVIEW	TINYURL.COM/CCPOANM	TINYURL.COM/6VZ5TOG	TINYURL.COM/6PG68Z3	TINYURL.COM/7WTKM8G	TINYURL.COM/8JF3YJG

>> Buying advice



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.

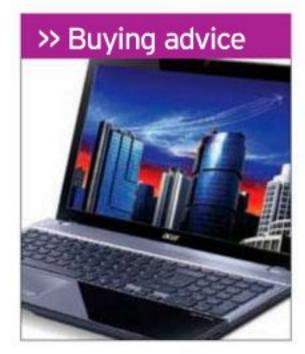
Beware of cheap glossy panels with poor contrast and colour gamut and, if possible, judge in person the screen quality and viewing angles before you buy. Ports are limited due to space constraints, but look for built-in ethernet or dongles that allow full-size ports to be connected.

A smaller chassis also means a smaller, often non-removable battery. Expect five hours of life.

There's no room for an optical drive, but you can always connect an external USB version.

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Sub-£500			2		
laptops	August No F74	Table Catallity Day 1959	C DVF4	Common ND200FFA A010V	L
Drice	Acer Aspire V3-571 £450 inc VAT	Toshiba Satellite Pro L850 £500 inc VAT	£500 inc VAT	£400 inc VAT	£370 inc VAT
Price Website	Acer.co.uk	Toshiba.co.uk	Samsung.com/uk	Samsung.com/uk	Lenovo.com/uk
Build rating	***	****	***	***	***
Features rating	****	***	****	***	****
Performance rating	***	****	***	****	***
Value rating	***	***	****	****	****
Overall rating	****	***	****	****	****
Processor	2.5GHz Intel Core i5-2450M	2.3GHz Intel Core i3-2350M	2.53GHz Intel Core i3-380M	2.2GHz Intel Core i3-2330M	1.6GHz AMD E450
RAM	6GB DDR3	6GB DDR3	6GB DDR3	4GB DDR3	4GB DDR3
Storage	500GB hard drive	750GB hard drive	640GB hard drive	500GB hard drive	500GB hard drive
Screen size	15.6in	15.6in	15.6in	15.6in	11.6in
Screen resolution	1366x768	1366x768	1366x768 pixels	1366x768 pixels	1366x768 pixels
Graphics	Intel HD Graphics 3000	Intel HD Graphics 3000	nVidia GeForce 315M	Intel HD 3000	AMD Radeon HD 6310M
Video memory	N/A	N/A	1GB	N/A	N/A
Wireless	802.11a/b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	gigabit	Gigabit
Bluetooth	√	✓	√	√ ·	√
USB	1x USB 3.0, 2x USB 2.0	2x USB 3.0, 1x USB 2.0	3x USB 2.0	3x USB 2.0	3x USB 2.0
FireWire	×	×	×	×	×
Thunderbolt	×	×	×	×	×
DisplayPort	×	×	×	×	×
НДМІ	✓	✓	✓	√	✓
DVI	×	×	×	×	×
VGA	✓	✓	✓	✓	✓
eSATA	×	×	×	*	*
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	8x DVD±R	8x DVD±R	8x DVD±R, 4x DVD±RW, 8x DVD-ROM	8x DVD±R, 4x DVD±RW, 8x DVD-ROM	N/A
Extras	Webcam	Webcam	Webcam	Webcam	Webcam
Operating system	Windows 7 Home Prem 64bit	Windows 7 Pro 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bi
Bundled software	Microsoft Office Starter	Microsoft Office Starter	None	None	None
Fear (Max detail)	16fps	15fps	33fps	12fps	18fps
Battery	48Wh lithium-ion	48Wh lithium-ion	48Wh lithium-ion	48Wh lithium-ion	48Wh lithium-ion
Battery life	5 hrs 18 mins	5 hrs 46 mins	5 hrs 15 mins	5 hrs 21 mins	5 hrs 38 mins
WorldBench 6 score	123	107	105	101	53
Dimensions	380x253x33mm	380x242x34mm	382x256x34mm	368x243x33mm	290x168x29mm
Weight	2.6kg	2.3kg	2.4kg	2.3kg	1.5kg
Warranty	1-year collect-and-return	1-year carry-in	1-year return-to-base	1-year return-to-base	1-year return-to-base
Verdict	Strong general performance Not much gaming potential Excellent trackpad, keyboard Reflective screen Decent battery life	i3 processor isn't the fastest Anti-glare matt screen Capacious hard drive Keys lack depth Windows 7 Professional	Solid performance for an i3 CPU in WorldBench 6 Good hard-drive capacity Light gaming potential Reflective screen	Fantastic price tag Low-capacity hard drive Flimsy lid Washed out colours Poor for gaming	Extremely portable More powerful than a netbook Glossy screen Rather slow



Sub-£500 laptops

Budget laptops are quick enough for most people, but economies are often made in build quality.

At the top end of the category you should find a highly capable Intel Core i-series processor. This will probably be a second-gen Sandy Bridge chip (ix-2xxx part number), but look out for a newer Ivy Bridge model (ix-3xxx). Windows 7 and 8 run on 2GB of RAM, but 4GB or more is useful.

Hard disks are the norm at this price, with 250GB enough for most people. If you're a video hoarder look for 500GB or more.

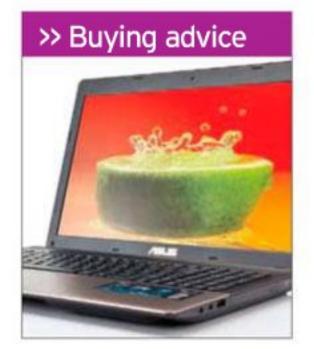
Wi-Fi is standard, but Bluetooth is not a given at the price.

The bodywork and display are the main areas in which costs are cut. Expect creaky plastic bodies, bendy frames and faux-metal paint jobs. Keyboards and trackpads are also likely to feel cheap and erratic.

Gloss screens hide inferior image quality. Colours are vivid, but the contrast may be poor. Check the visibility at an angle.

Some laptop manufacturers scrimp on the battery. Look for a rating of 48Wh or more. READ MORE: TINYURL.COM/CA9EXZ6





£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 GOLD	PC ADVISOR RECOMMENDED	3	PC ADVISOR RECOMMENDED	5
	Apple MacBook Pro Retina	Alienware M14x	Dell Latitude E6420 ATG	Rock Xtreme X685-i5-2540M	Toshiba Qosmio X870-11Q
Price	£1,799 inc VAT	£1,398 inc VAT	£1,293 inc VAT	£1,229 inc VAT	£1,699 inc VAT
Website	Apple.com/uk	Alienware.co.uk	Dell.co.uk	Rockdirect.com	Toshiba.co.uk
Build rating	****	****	****	****	***
Features rating	****	****	****	★★★☆	****
Performance rating	****	****	****	****	****
Value rating	****	****	*****	****	***
Overall rating	****	****	****	****	***
Processor	2.3GHz Intel Core i7-3615QM	2.66GHz Intel Core i7-3720QM	2.8GHz Intel Core i7-2640M	2.6GHz Intel Core i5-2540M	2.3GHz Intel Core i7-3610QM
RAM	8GB DDR3L	8GB DDR3	4GB DDR3	6GB DDR3	16GB DDR3
Storage	128GB SSD	64GB SSD, 500GB HDD	128GB SSD	500GB hard drive	128GB SSD, 1TB hard drive
Screen size	15.4in	14.1in	14in	15.6in	17.3in
Screen resolution	2880x1800	1600x900	1366x768 pixels	1920x1080 pixels	1920x1080 pixels
Graphics	nVidia 650M, Intel HD 4000	nVidia GeForce GT 650M	Intel HD Graphics 3000	AMD Radeon HD 6990	nVidia GeForce GTX 670M
Video memory	1GB	1GB	N/A	2GB	3GB
Wireless	802.11a/b/g/n	802.11b/g/n	802.11a/b/g/n	802.11a/b/g/n	802.11b/g/n
Ethernet	×	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	√ ·	√ ·
USB	2x USB 3.0	2x USB 3.0, 1x USB 2.0	3x USB 2.0	2x USB 3.0, 2x USB 2.0	4x USB 3.0
FireWire	×	×	×	×	×
Thunderbolt	√ (2)	×	×	×	×
DisplayPort	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	✓	×	×	×
HDMI	√	✓	✓	√	✓
DVI	x	×	×	√	×
VGA	×	√	√ ·	×	√ ·
eSATA	×	×	/		*
Media card slot	~	<i>-</i>	√ ·	·	
Audio	Headphone jack, Toslink out			Headphone jack, mic	
Optical drive	N/A	8x DVD+/-R, 2.4x DVD-RW, 4x DVD+RW, 8x DVD-ROM	Headphone jack, mic 8x DVD±R, 2.4x DVD-RW, 4x DVD+RW, 8x DVD-ROM	6x BD-ROM, 8x DVD±R, 2.4x DVD-RW, 4x DVD+RW	2x Harman Kardon speakers BD-RE/DVD±RW DL
Extras	HD webcam, multitouch trackpad, backlit keyboard	N/A	Webcam, fingerprint reader	Webcam, fingerprint reader	Webcam, Kensington lock
Operating system	Mac OS X 10.7.4 Lion	Windows 7 Home Prem 64bit	Windows 7 Pro 32bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit
Bundled software	iLife 11	None	None	None	Toshiba Blu-ray Disc Player
Fear (Max detail)	N/A	84fps	17fps	275fps	205fps
Battery	99Wh lithium-polymer	63Wh lithium-ion	60Wh lithium-ion	76Wh lithium-ion	47Wh lithium-ion
Battery life	N/A	5 hrs 7 mins	6 hrs 24 mins	2 hrs 30 mins	2 hrs 18 mins
WorldBench 6 score	N/A	168	155	124	170
Dimensions	359x247x18mm	337x258x38mm	352x241x35mm	376x256x43mm	417x272x43.7mm
Weight	2.02kg	2.9kg	2.7kg	3.1kg	3.45kg
Warranty	1 year return-to-base	1 year in-home support	3 years onsite	3 years onsite	1 year carry-in
Verdict	Gorgeous super-resolution Retina display Outstanding build quality Wonderfully light and slim Effortless to use	Great gaming system Stunning WorldBench score Cool looks Glossy screen can be difficult to read	Rugged build quality Fantastic general speed Lacklustre for gaming Long battery life, given the performance	Great performance Great performance Compared to the second properties of the second propertie	Desktop-replacement model Huge 16GB of RAM Poor build quality Active-shutter 3D tech Good for gaming
FULL REVIEW	TINYURL.COM/7YGC3KJ	TINYURL.COM/CLGSCMV	TINYURL.COM/CBA725B	TINYURL.COM/BTZSQ97	TINYURL.COM/C3F8XP2

>>> Buying advice

£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.

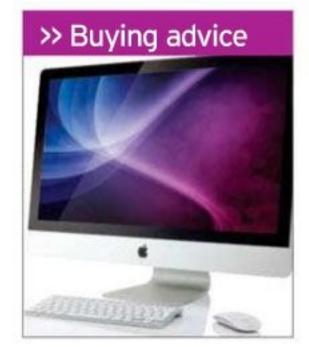
Ultraportables may have 256GB or more of solid-state storage, but won't have an optical drive or GPU.

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

All-in-one PCs	PC ADVISOR BEST BUY	PC ADVISOR BEST BUY	2 PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	5
	Apple iMac 27in 2.7GHz	Lenovo IdeaCentre A720	HP Z1 (WM429EA)	Asus ET2411NTI	PC Spec PowerGlide Extreme
Price	£1399 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 i5-2500S	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	4GB 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	27in IPS glossy	27in MVA 10-point touchscreen	27in IPS	23.6in TN 2-point touchscreen	24in TN 2-point touchscreen
Screen resolution	2560x1440	1920x1080	2560x1400	1920x1080	1920x1080
Graphics card	AMD Radeon HD 6770M	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	✓	✓	✓	V	V
Bluetooth	V	×	×	×	×
USB	4x USB 2.0	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	✓	✓	✓	×	×
Thunderbolt	✓	×	×	×	×
НДМІ	×	✓	×	V	✓
Media card slot	✓	1	✓	✓	✓
Max disc speeds	8x DVD±R, 4x DVD±R DL, 8x DVD-ROM	BD-ROM/DVD ± RW	DVD±R	BD-ROM/DVD±RW	BD-ROM/DVD-+RW
Extras	Webcam, wireless keyboard	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 10.7 Lion	Windows 7 Home Premium 64bit	Windows 7 Professional 64bit	Windows 7 Home Premium 64bit	Windows 7 Home Premium 64bit
Power consumption	67W (idle), 180W (under load)	45W (idle), 111W (under load)	82W (idle), 210W (under load)	34W (idle), 93W (under load)	54W (idle), 132W (under load)
Crysis (720p)	133fps	111fps	109fps	104fps	111fps
Crysis (1080p)	12fps	8fps	7fps	7fps	8fps
WorldBench 6 score	147	140	172	163	169
Dimensions	650x517x207mm	650x220x480mm	660x419x59mm	590x461x230mm	571x128x464mm
Weight	13.8kg	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	Peerless design and build quality Fantastic high-quality 27in screen Excellent gaming speed WorldBench score not as high as some OS X operating system	Sleek and stylish 10-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 i5-3570K packs lots of power Fans are too noisy No preinstalled software
FULL REVIEW	TINYURL.COM/7THNXU8	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

Gaming PCs	PC ADVISOR BEST BUY		S PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	
	Yoyotech Warbird 3570XTA	Eclipse Vengeance i5357r795 OC	Arbico Elite 5357 OCX	Dino PC Maxosaurus 3570K	CyberPower Fang III Rattler
Price	£1,149 inc VAT	£1,200 inc VAT	£1,200 inc VAT	£1,399 inc VAT	£1,399 inc VAT
Website	Yoyotech.co.uk	Eclipse-computers.co.uk	Arbico.co.uk	Dinopc.com	Cyberpowersystem.co.uk
Build rating	***	****	***	****	****
Features rating	****	****	***	***	***
Performance rating	****	****	****	****	****
Value rating	****	****	***	***	***
Overall rating	****	****	****	****	****
Processor	3.4GHz (4.5GHz) Intel Core i5-3570K	3.4GHz (4.7GHz) Intel Core i5-3570K	3.4GHz (4.4GHz) Intel Core i5-3570K	3.4GHz (4.4GHz) Intel Core i5-3570K	3.4GHz (4.5GHz) Intel Core i5-3570K
CPU cooler	Arctic Freezer cooler	Zalman cooler	Xigmatek Gaia	Xigmatek Prime SD1484	Advanced water cooling
Memory	8GB DDR3	16GB DDR3	16GB DDR3	16GB DDR3	8GB DDR3
Storage	120GB SSD + 2TB 3.5in HDD	128GB SSD + 1TB 3.5in HDD	120GB SSD + 2TB 3.5in HDD	60GB SSD + 1TB 3.5in HDD	128GB SSD + 1TB 3.5in HDD
Power supply	550W OCZ	550W XFX	580W Xilence	700W Xigmatek	650W Cooler Master GX650W
Motherboard	Asus P8Z77-V LX	Asus P8Z77-V LX	Asus P8Z77-V LX	Asus P8Z77-V	Asus P8Z77-V Pro
USB	3x USB 3.0, 5x USB 2.0	6x USB 3.0, 4x USB 2.0	4x USB 3.0, 12x USB 2.0	6x USB 3.0, 2x USB 2.0	6x USB 3.0, 3x USB 2.0
Screen	23.6in Asus VS247H (1920x1080)	24in BenQ GL2450 (1920x1080)	Not supplied	23.6in Asus VS247H (1920x1080)	Not supplied
Graphics	2GB PNY GeForce GTX 670	3GB XFX Radeon HD 7950	2GB Palit GeForce GTX 680	2GB Zotac GeForce GTX 670	2GB Palit GeForce GTX 670
Sound	Onboard	Onboard	Onboard	Asus Xonar DGX PCIe	Onboard
Connectivity	Gigabit ethernet	Gigabit ethernet	Gigabit ethernet	Gigabit ethernet, 802.11b/g/n	Gigabit ethernet, 802.11b/g/n
VGA	×	×	×	×	×
DVI	√ (2)	✓	√ (2)	√ (2)	√ (2)
HDMI	✓	✓	✓	✓	✓
DisplayPort	✓	✓	✓	✓	✓
FireWire	×	×	×	×	×
eSATA	×	×	✓	×	×
Case	Gigabyte Luxo X10	X11 X-Station	CIT Jupiter	Corsair Carbide 300R	Azza Fusion 3000
Keyboard & mouse	Microsoft Wired Desktop 400	Microsoft Wireless Desktop 800	Not supplied	Razer Arctosa, Gigabyte M8000X	Not supplied
Optical drive	BD-ROM/DVD±RW	22x DVD±RW	BD-ROM/DVD±RW	BD-ROM/DVD±RW	BD-ROM/DVD±RW
Operating system	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit
Extras	None	None	None	None	Microsoft Office 2010 Starter
WorldBench 6 score	209	218	214	213	205
Gaming performance ¹	106/68/53/111fps	112/69/62/141fps	110/75/57/118fps	102/67/52/110fps	105/66/51/109fps
MediaEspresso time	4 mins 3 secs	Not tested	4 mins 1 sec	4 mins 13 secs	Not tested
Power Consumption ²	89W/185W	111W/239W	63W/192W	83W/194W	98W/160W
Warranty	3-year RTB (labour)	1 year return-to-base	2-year RTB (labour)	3-year RTB (2yr parts, labour)	3-year RTB (labour)
Verdict	Very good performance GTX 670 graphics card isn't the fastest on offer Only 8GB of RAM	Excellent WorldBench 6 performance score 7950 isn't a new graphics card, but it is fast Interesting white case, but it can be cramped Good value with a screen	High WorldBench score GTX 680 ensures excellent games speed Limited motherboard Strong storage capacity	Strong general performance Keyboard and mouse are proper gaming models Graphics card only an nVidia GTX 670 Sound card a cut above onboard solutions	Water-cooled system Premium motherboard Easy-swap drive bays Performance could be better, given the water-cooling capabilities
FULL REVIEW	TINYURL.COM/7KPQCY6	TINYURL.COM/8D522BW	TINYURL.COM/7CL6865	TINYURL.COM/6RSJEY2	TINYURL.COM/BSC6RB2

'Tested in Crysis at 1080p, High (no AA)/V High (no AA)/V High (16x AA)/Stalker: Call of Pripyat at 1080p, Ultra 2Tested when idle and in Crysis



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 i5-2500K is a popular choice of CPU, but will require a decent cooler and beefy PSU. The HyperThreaded i7-2600K is slightly faster, but dearer.

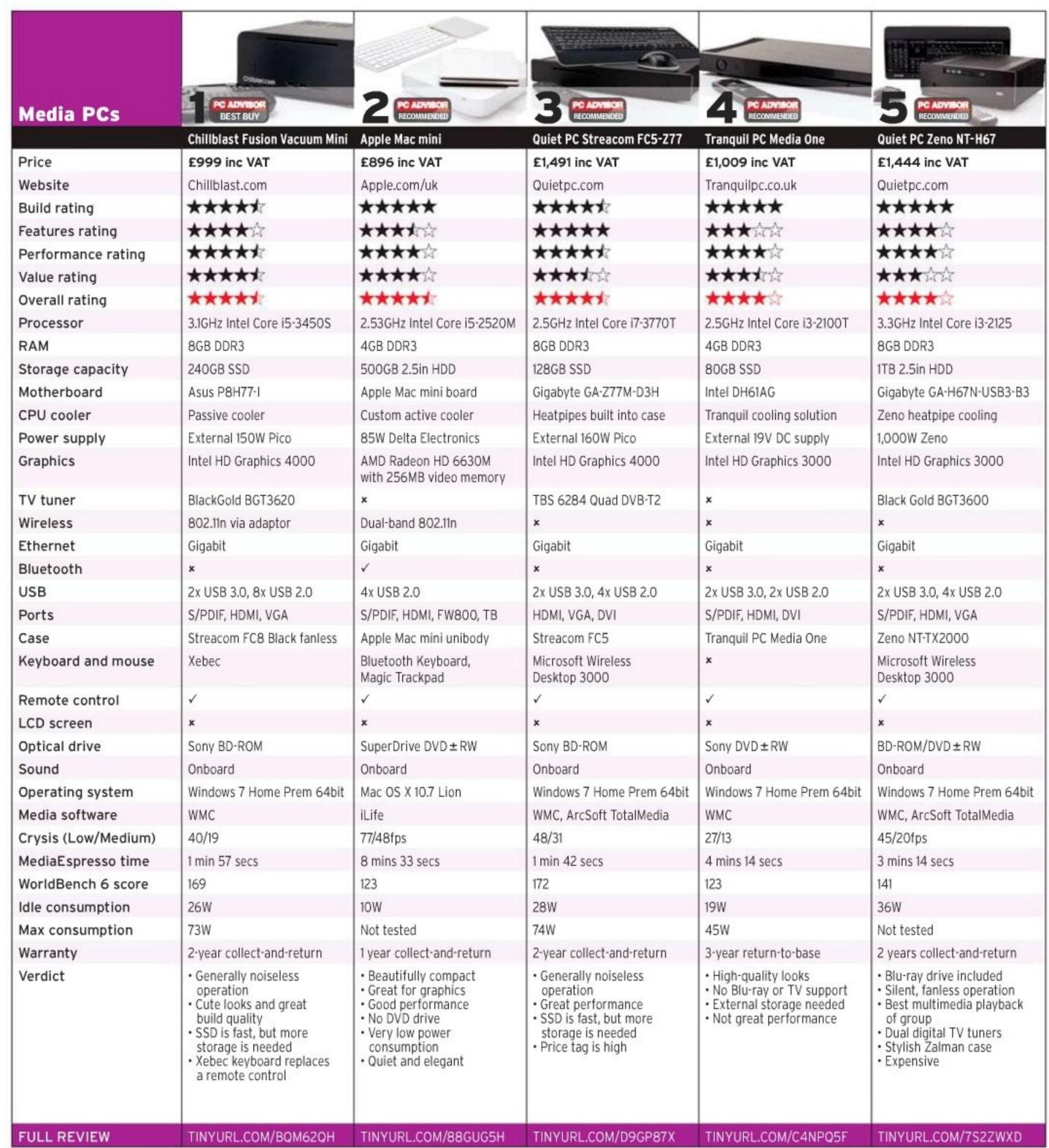
Cooling is essential for stability. Liquid-cooling systems, dust filters, fan-speed controls and good cable-management can aid airflow.

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.

AMD's Radeon HD 7970 delivers unparalleled performance - but at a price. Cheaper solutions include the nVidia GeForce GTX 560 Ti.

Look for wired peripherals and a headset. Good warranty terms are crucial for overclocked PCs. READ MORE: TINYURL.COM/CZXH443



GLOSSARY: FW800: FireWire 800 TB: Thunderbolt WMC: Windows Media Center



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 -

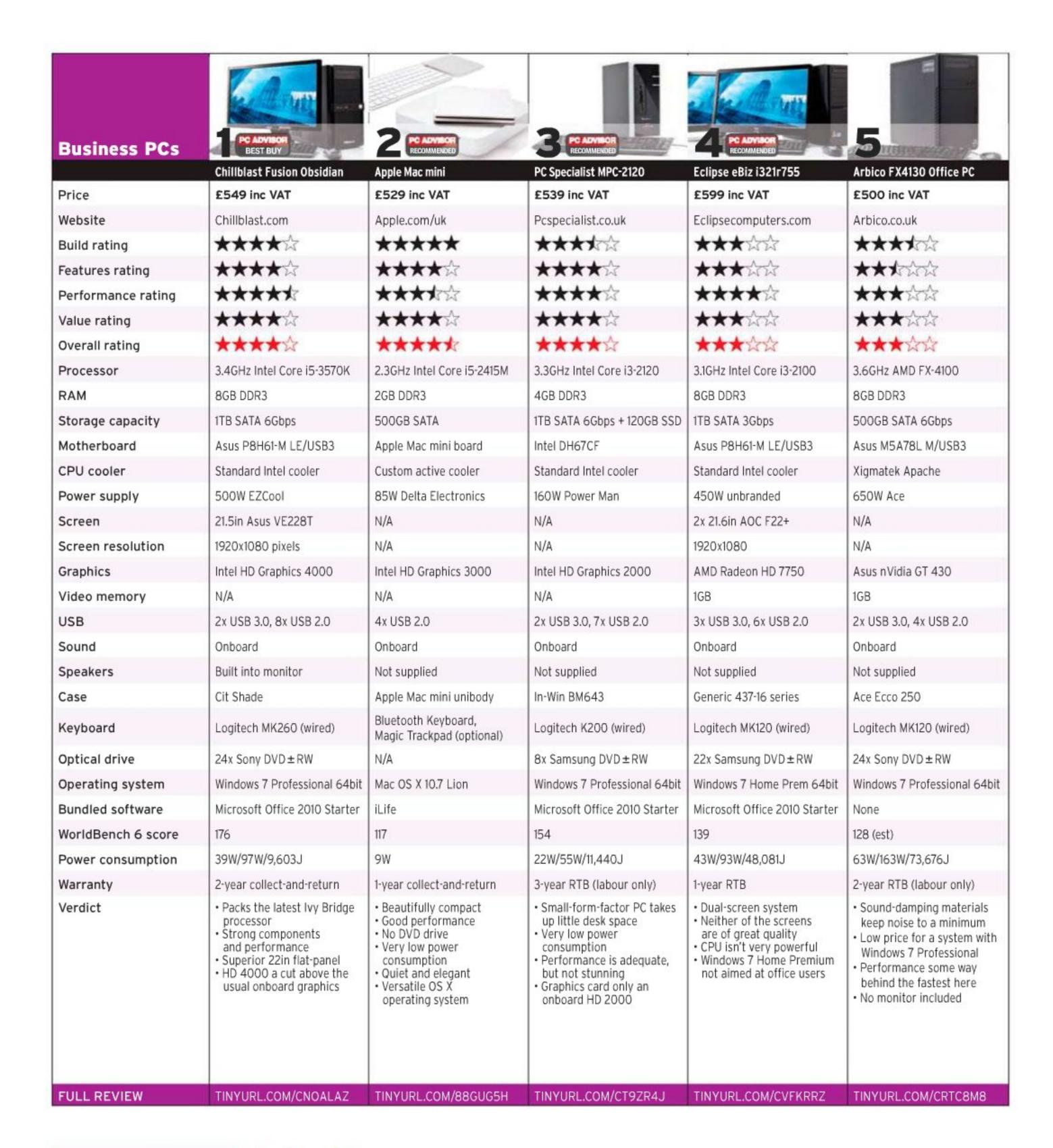
not only will the PC probably be left switched on for long periods, but a high-performance processor will generate large amounts of heat, and cooling that chip can involve noisy whirring fans.

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



>> Buying advice

Business PCs

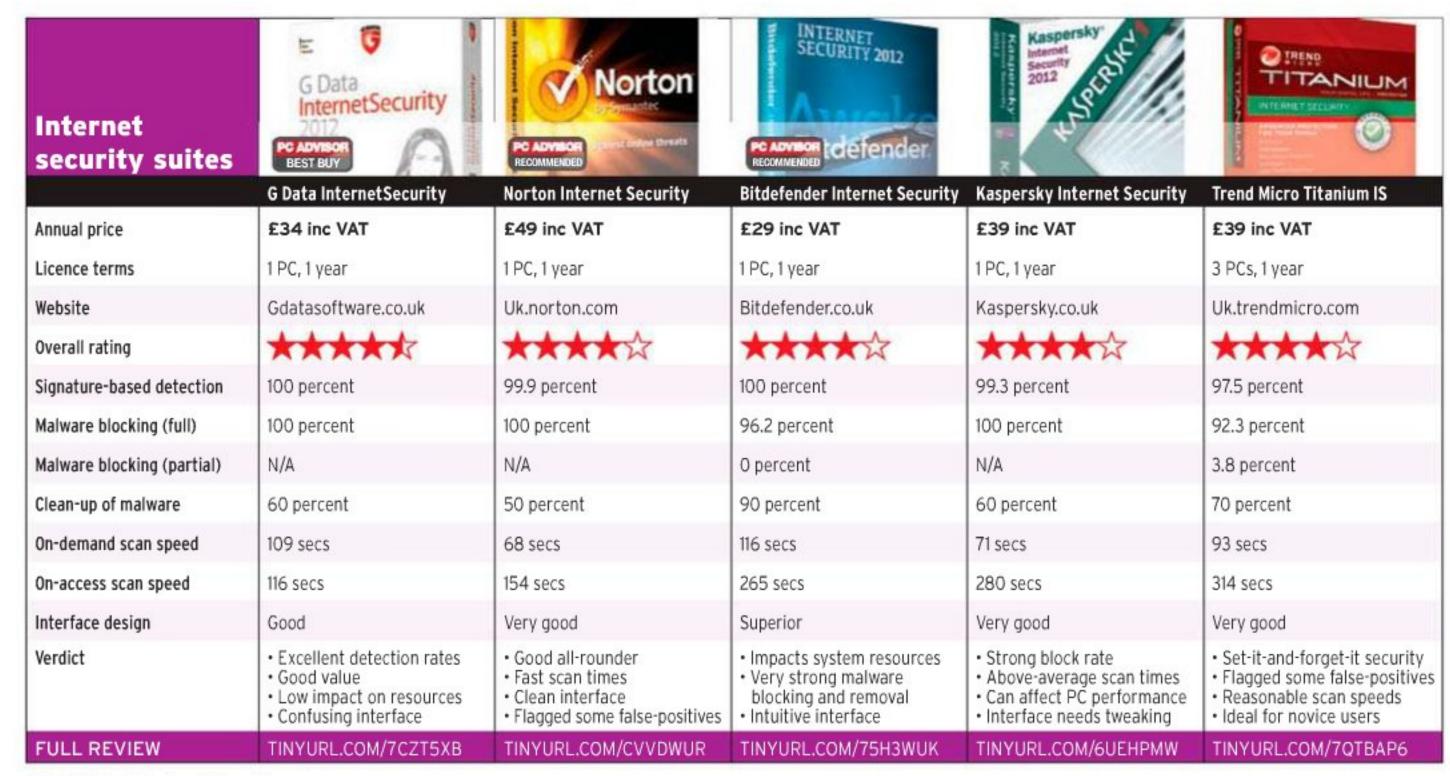
Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

Provided you have sufficient RAM (at least 2GB, but preferably 4GB), any modern CPU will provide enough power for low-level admin tasks. Intel's Core i3 provides ample performance for general use and come with integrated graphics, saving you the cost of buying an additional card.

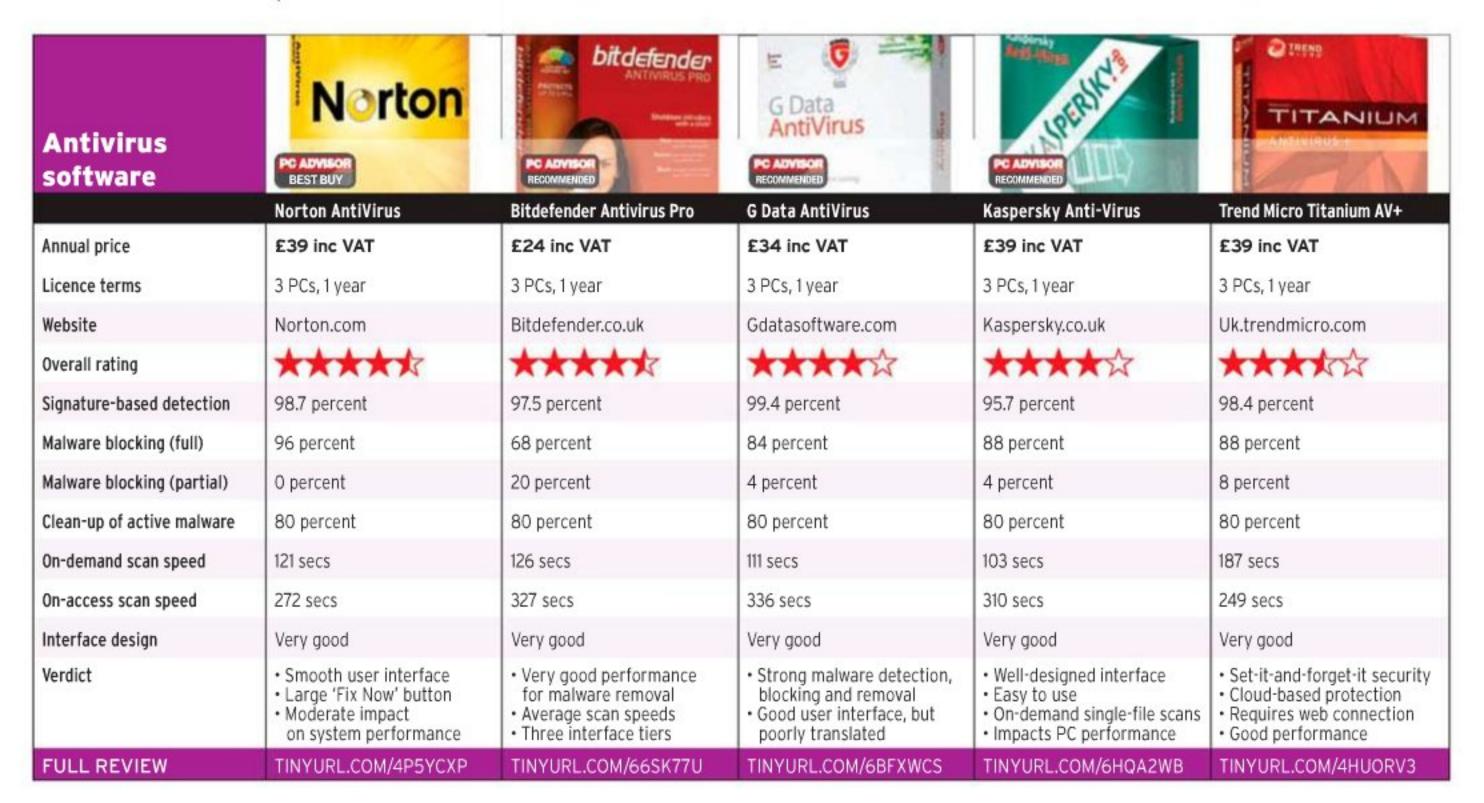
In a typical networked business environment there will be storage available on the LAN, so you're unlikely to need a large hard drive. A 500GB drive should be ample.

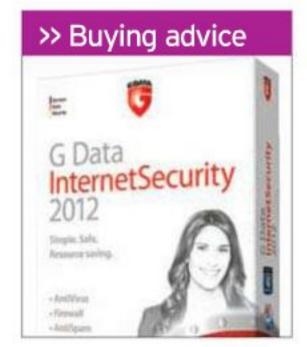
Wireless keyboards and mice can cause issues in the workplace due to interference between adjacent workstations. A decent wired kit is ideal, while quiet-typing keyboards can be less distracting.

For small businesses with just one or two PCs, Windows 7 Home Premium is cheaper but can't connect to servers. The Pro edition is a better option for businesses, especially if you need compatibility with older software.



GLOSSARY: • IS: Internet Security





Security software

Every connected PC should have at least antivirus, antispyware and a firewall, and it's important that each is kept up to date. Avoid installing more than one real-time scanning component.

We work with world-renowned independent security testing lab AV-Test.org to evaluate the effectiveness of security software. No security software is foolproof, but some are significantly better than others. And factors such as ease of setup, scan speeds, interface design and ability to deal with new threats set them apart.

The best products will offer parental controls, cloud protection, anti-phishing, anti-rootkit, virtual web browsers and keyboards, link and file scanners, gaming modes, online backup and more.

The best value is usually offered by a three-user licence, but you can save some cash if your household has only one PC.

There are some good free antivirus products but, as in life, you get what you pay for. READ MORE: TINYURL.COM/7NR8FSM

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- •Intel HD4000 Graphics Card
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Sub-£150 printers	PC ADVISOR BEST BUY	2 PC ADVISOR GOLD	3	Com.	5
	Oki C110	Samsung ML-2955DW	Kodak Hero 5.1	Canon Pixma MG4150	Canon i-Sensys LBP-7010C
Price	£107 inc VAT	£98 inc VAT	£77 inc VAT	£60 inc VAT	£108 inc VAT
Website	Oki.co.uk	Samsung.com/uk	Kodak.co.uk	Canon.co.uk	Canon.co.uk
Overall rating	****	****	****	***	***
Technology	Colour laser	Mono laser	Colour inkjet	Colour inkjet	Colour laser
Max print resolution	1200x600dpi	1200x1200dpi	9600dpi	4800x1200dpi	5760x1440dpi
Actual print speed	B=15.8ppm/C=2.5ppm	B=22.2ppm	B=12.2ppm/C=6.8ppm	B=8.6ppm/C=3.8ppm	B=13ppm/C=3.3ppm
Scan/fax facilities	None	none	1200dpi scans	1200x2400dpi scans	None
Supported interfaces	USB 2.0	USB 2.0, 802.11b/g/n, ethernet	USB 2.0, 802.11b/g/n, cloud	USB 2.0, 802.11b/g/n	USB 2.0
Cost per page	B=3.6p/C=5p	B=2.7p	B=1.8p/C=3.3p	B=2.8p/C=4.5p	B=3.8p/C=13.8p
Media card/auto duplex	××	×√	√ √	//	××
Input capacity	100 sheets	251 sheets	100 sheets	100 sheets	150 sheets
Dimensions	396x380x275mm	348x338x197mm	422x399x183mm	449x304x152mm	400x398x223mm
Weight	14.4kg	7.2kg	6.3kg	5.7kg	12.3kg
Warranty	3 years	1 year	1 year	2 years	2 years
Verdict	Attractive pricing Performs better than an equivalent inkjet No duplex mode	Speedy for the price Slim but well-defined text Reasonable running costs Wi-Fi/wired network support	Printer/scanner/copier Lowest cost per print Built-in Wi-Fi Could be faster	Excellent value at £60 Decent middle-mode speeds Complex control panel High text running costs	Great value colour laser High-quality colour prints Slow colour performance Expensive replacement inks
FULL REVIEW	TINYURL.COM/YLNO5RV	TINYURL.COM/CCLSZDM	TINYURL.COM/6S5BW3B	TINYURL.COM/6UJBGDJ	TINYURL.COM/7TLXCBK



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.

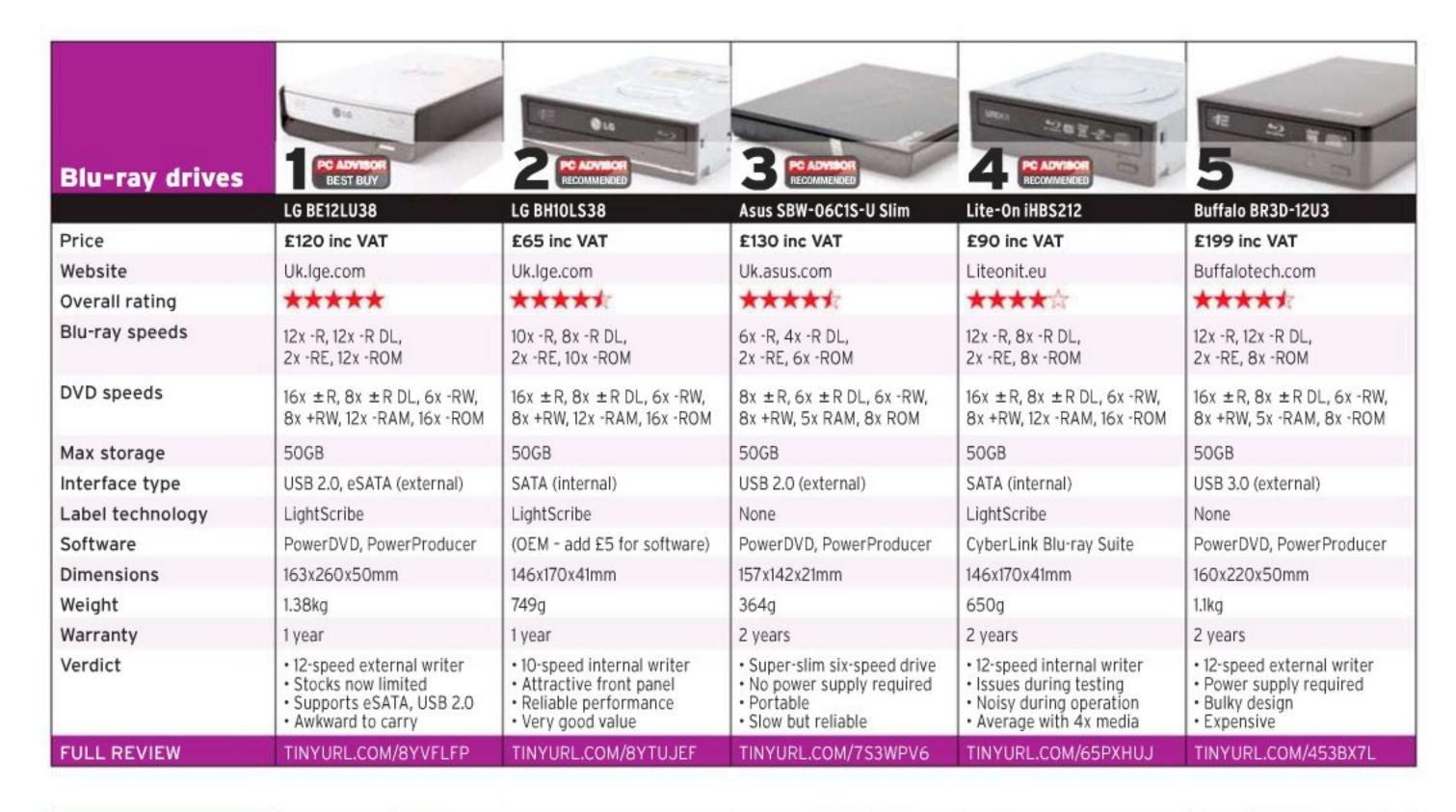
Multifunction printers can save you money if you also require scanning facilities; some models include copy and fax functions, too.

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







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







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 typically connected to a network router. Many NAS drives are typically supplied without disks, letting you add your own selection.

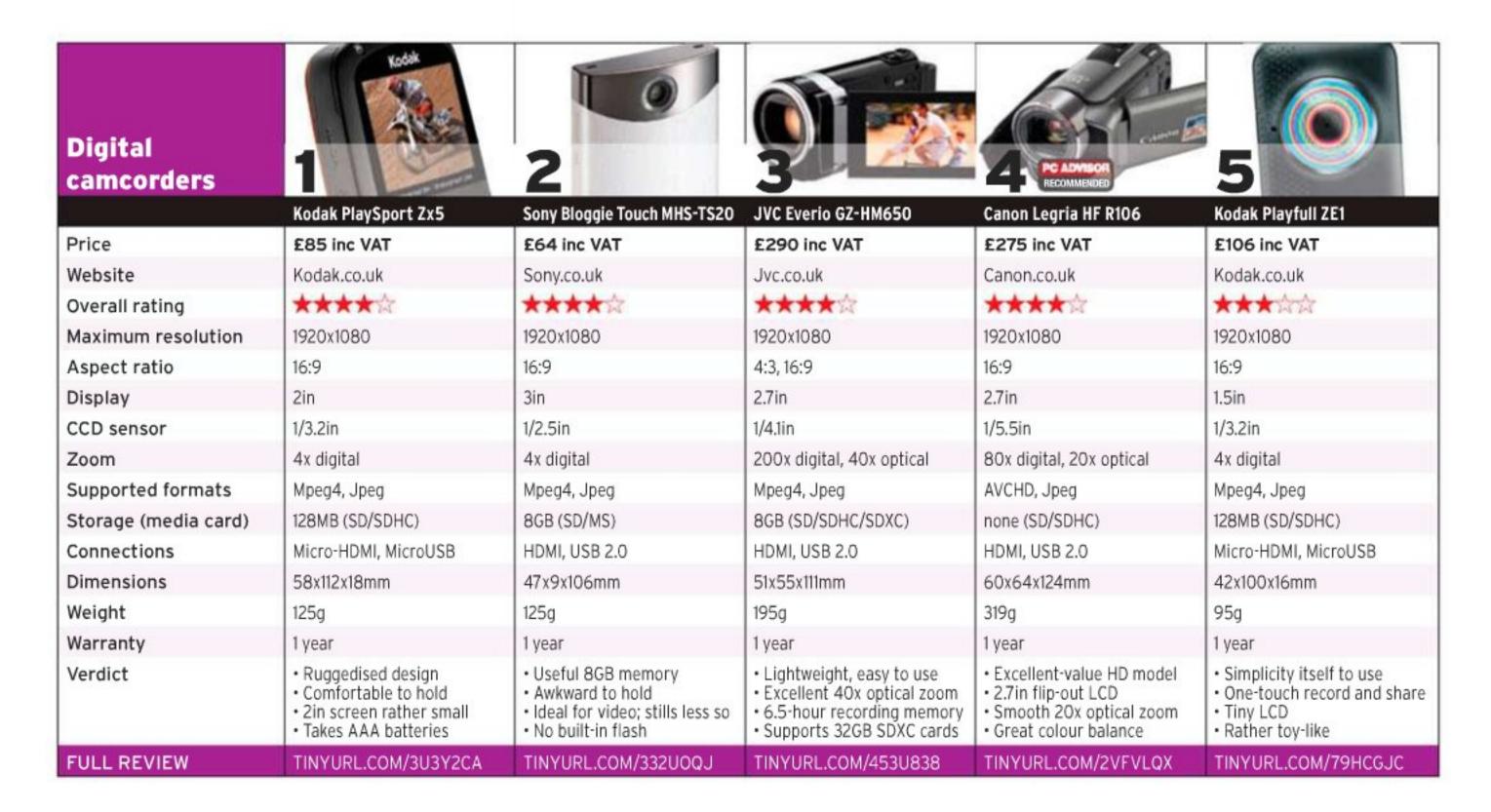
Most NAS drives allow virtual partitions, letting you keep data such as PC backups separate from media files. Home-oriented NAS drives also include media servers to allow easy streaming of content.

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 • SV: S-Video





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

Compact digital cameras BEST BUY Samsung MV800 Nikon Coolpix S9100 Panasonic Lumix DMC-TZ20 Canon PowerShot G12 Nikon 1 J1 £320 inc VAT £400 inc VAT Price £190 inc VAT £160 inc VAT £170 inc VAT Website Nikon.co.uk Panasonic.co.uk Nikon.co.uk Samsung.com/uk Canon.co.uk *** *** *** *** *** Overall rating 12.1Mp 14.1Mp 10.1Mp 16.2Mp Megapixel rating 10Mp Maximum resolution 4000x3000 pixels 4320x3240 pixels 3872x2592 pixels 4608x3456 pixels 3648x2736 pixels Optical zoom 18x 16x 3x 5x 5x f3.5-f5.9 f3.3-f5.9 N/A f3.3-f5.9 f2.8-f4.5 Maximum aperture LCD size 2.8in 3in 2.8in 3in 3in SD/SDHC SD/SDHC SD/SDHC MicroSD SD/SDHC Media card Battery/life 1x lithium-ion/270 shots 1x lithium-ion/not specified 1x lithium-ion/260 shots 1x lithium-ion/230 shots 1x lithium-ion/370 shots 160 to 3200 100 to 1600 100 to 3200 125 to 3200 80 to 3200 ISO range Dimensions 106x35x62mm 105x33x58mm 106x30x61mm 92x18x56mm 112x48x76mm 214g 219g Weight 274g 124g 401g Warranty 2 years 1 year 2 years 1 year 2 years Comprehensive feature set Verdict Excellent photo quality Comprehensive menu Mirrorless semi-compact Flip-up touchscreen LCD Longest zoom range here 1920x1080-pixel video Limited 5x optical zoom Warm, natural colour range Solid construction High dynamic range setting GPS geotagging support Good range of video modes Better for video than photos Ideal step-up from compacts Incredible 240fps slow-mo AVCHD or Mpeg video Deep colours Great panorama mode Easy to use **FULL REVIEW** TINYURL.COM/4QHAF66 TINYURL.COM/6E457PY TINYURL.COM/6XNRWUO TINYURL.COM/7ZC25FY TINYURL.COM/83SSNQX





Compact system cameras

Compact system cameras (or interchangeable-lens cameras) bridge the gap between compacts and digital SLRs. They are ideal for those who want the versatility and quality of a digital SLR, with the ease of use of a compact.

A mirrorless design allows compact system cameras to be smaller than digital SLRs, while the lack of an optical viewfinder means an LCD is used for composition and review. Large sensors allow them to rival an SLR for image quality.

Compact system cameras are ready to shoot in seconds, and most offer burst modes that capture several frames per second.

Although the camera lens can be swapped, not all will be compatible with your chosen model. Panasonic and Olympus both use the Micro Four Thirds system, but Sony has its own E-mount system and Samsung uses NX-mount lenses.

Most compact system cameras record HD video, but the quality varies. If this is a priority, choose a model that can record 1080p video and also has a microphone input.

READ MORE: TINYURL.COM/7DPM3SX







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).

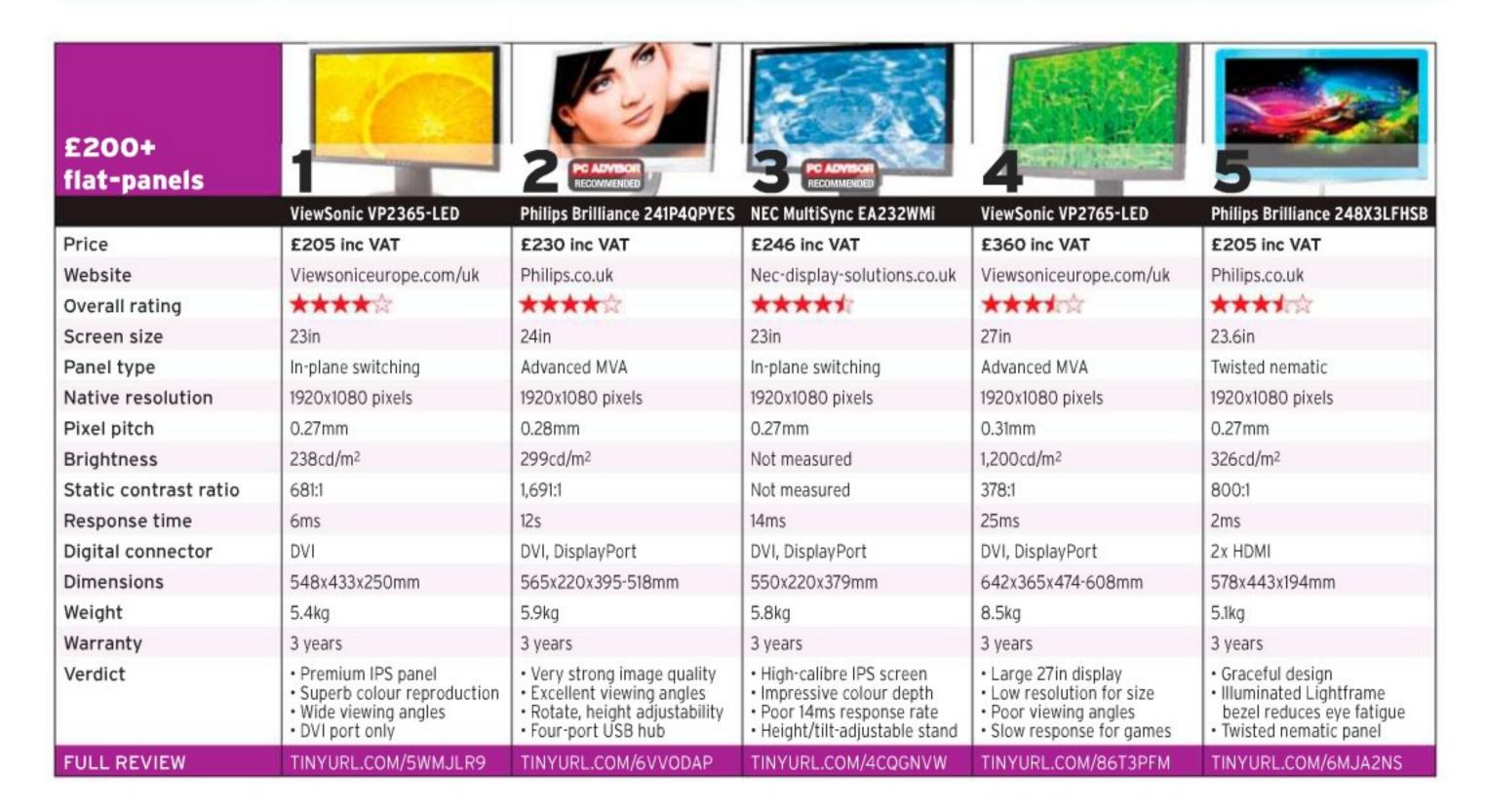
The memory interface (or bus) governs how much data can be sent at once, so a 256bit interface lets through twice as much data as a 128bit interface. Graphics cards with the best combination of memory interface size and

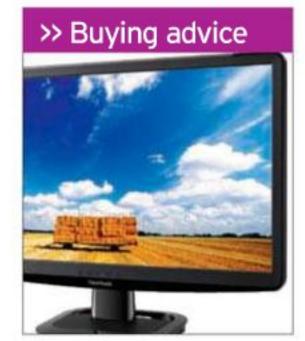
clock speed should produce the best performance.

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

Sub-£200 PC ADVISO BEST BUY flat-panels Viewsonic VX2336s-LED AOC i2352Vh AOC i2353Fh liyama ProLite XB2472HD Hanns-G HL249DPB Price £130 inc VAT £132 inc VAT £145 inc VAT £108 inc VAT £190 inc VAT Website Viewsoniceurope.com Aoc-europe.com Aoc-europe.com Hannsg.com liyama.co.uk *** *** **** **** *** Overall rating Screen size 23in 23in 23in 23.6in 24in Vertical alignment In-plane switching Twisted nematic Panel type In-plane switching In-plane switching 3D Native resolution 1920x1080 pixels 1920x1080 pixels 1920x1080 pixels 1920x1080 pixels 1920x1080 pixels 0.28mm Pixel pitch 0.27mm 0.27mm 0.27mm 0.27mm 233cd/m² 258cd/m² 225cd/m² 247cd/m² Brightness Not measured 710:1 731:1 Static contrast ratio 666:1 740:1 Not measured 5ms 8ms 14ms 5ms 5ms Response time 2x HDMI, VGA DVI, HDMI Digital connector DVI DVI, HDMI, VGA DVI 563x211x403mm Dimensions 548x426x201mm 247x185x399mm 550x388x188mm 570x215x438mm Weight 3.6kg 3.2kg 3.8kg 5.6kg 6.2kg Warranty 3 years 3 years 3 years 3 years 3 years · Wonderful 24bit Verdict Excellent value IPS panel Good value IPS panel Wide viewing angles Extremely low price Strong image quality Accurate colours Excellent colours Pleasing image quality colour reproduction · No HDMI or speakers Attractive, slimline deign Low power consumption Viewing angles not great Plain styling · Height-adjustable stand No DVI connection Slow response rate Few extras Only a TN panel **FULL REVIEW** TINYURL.COM/86JF4W2 TINYURL.COM/7HXTPVV TINYURL.COM/7TWLB2A TINYURL.COM/C95859A TINYURL.COM/3DYX75Z





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





What is an Ultrabook anyway?



ver the past year, the term 'Ultrabook' has been forcing its way into tech parlance. But what is an Ultrabook? The answer depends on who you ask.

Some might say an Ultrabook is the Windows equivalent of Apple's MacBook Air; others view it as a modern-day ultraportable. According to Intel, it's a thinner, longer-lasting laptop with uncompromised performance.

The truth is there are few definitive specifications, so Ultrabooks vary widely in their size, weight and capabilities. And the 'Inspired by Intel' tagline seen in Ultrabook ads can mean many things.



Primarily, it means that the processor inside must be an Intel rather than AMD variant. Intel also defines the laptop's height, battery life, time in which it must resume from hibernation and the firmware in use. Just about everything else is up to the manufacturer, including style.

It seems only huge Intel-powered laptops are prevented from going under the Ultrabook name, with a maximum thickness of 21mm for 14in-plus screens, and 18mm for smaller displays. Weight isn't restricted.

Current-generation Ultrabooks must run an Ivy Bridge chip, have a drive capable of 80MBps and support USB 3.0. The previous thickness specs still stand, with the addition of a 23mm requirement for convertible touchscreen models. It won't be until Ivy Bridge's successor, Haswell, launches next year that the minimum runtime will rise from five- to nine hours.

Intel hopes Ultrabooks can shore up slumping laptop sales as tablets rise in popularity, and offer an alternative to the Air. For most people, though, they remain unattainably expensive - only the £1,000-plus models offer snappy performance, long battery life and stylish design.

These are also traits of the MacBook Air, of course, which is available at a similar price and can even run Windows.

What Ultrabook makers seemingly fail to understand is the need to build laptops people want to use - something Apple nailed a long time ago. In my opinion, the hysteria surrounding iPhone and iPad launches happens for good reason: Apple products are the best you can buy.

Next issue

ISSUE 210 ON SALE 8 NOVEMBER 2012



Windows 8 laptops

We test and rate a batch of £600-to-£1,000 laptops running Windows 8

and offer our expert buying advice.



Windows 8 PCs

Windows 8 isn't designed only for CENTRE portable devices; we also look at six

desktop PCs that run Microsoft's latest OS.



TEST Inkjet multifunction printers

We put the latest multifunction printers CENTRE through their paces, and find the best

choice for printing, copying and scanning.

Christmas gift guide

Treat the gadget lovers in your life with gifts they'll adore this Christmas. We round up a selection of stocking fillers across a range of budgets.

Your guide to 4G

We bring you up to speed with the UK's fourth generation of mobile broadband, including whether you'll be able to access the faster network.

Beat tablet and smartphone storage limits

We show you how to get more storage space on your tablet or smartphone for your growing collection of pictures, video, music and apps.

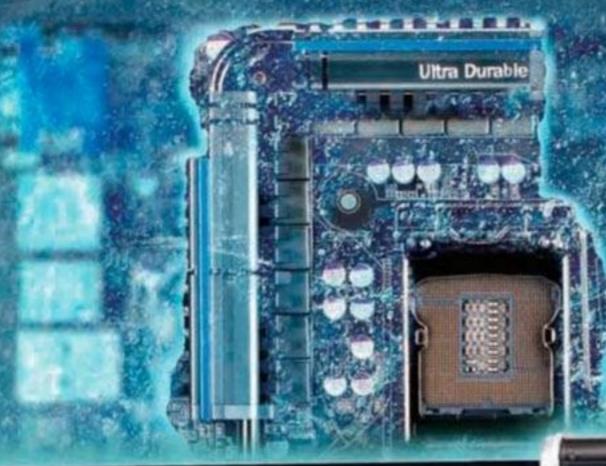


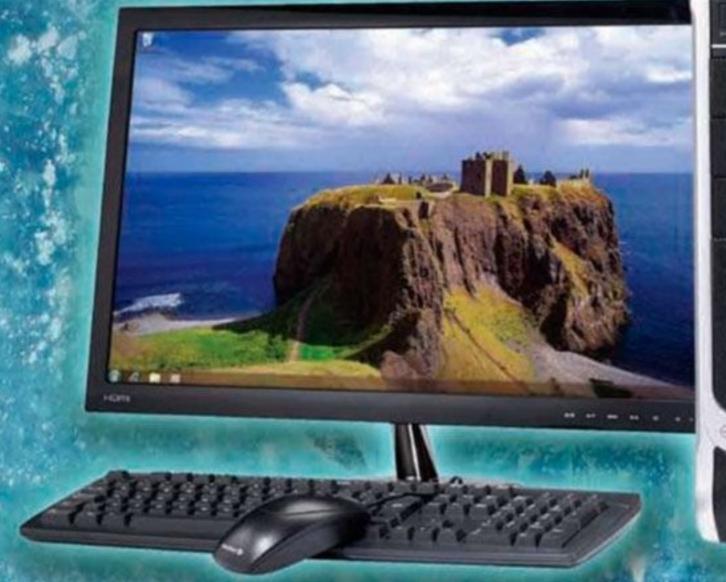


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Specification

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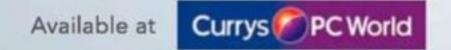
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