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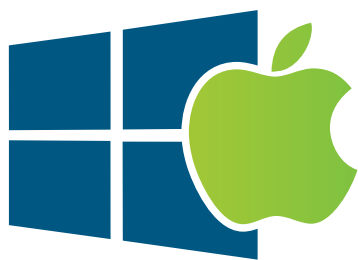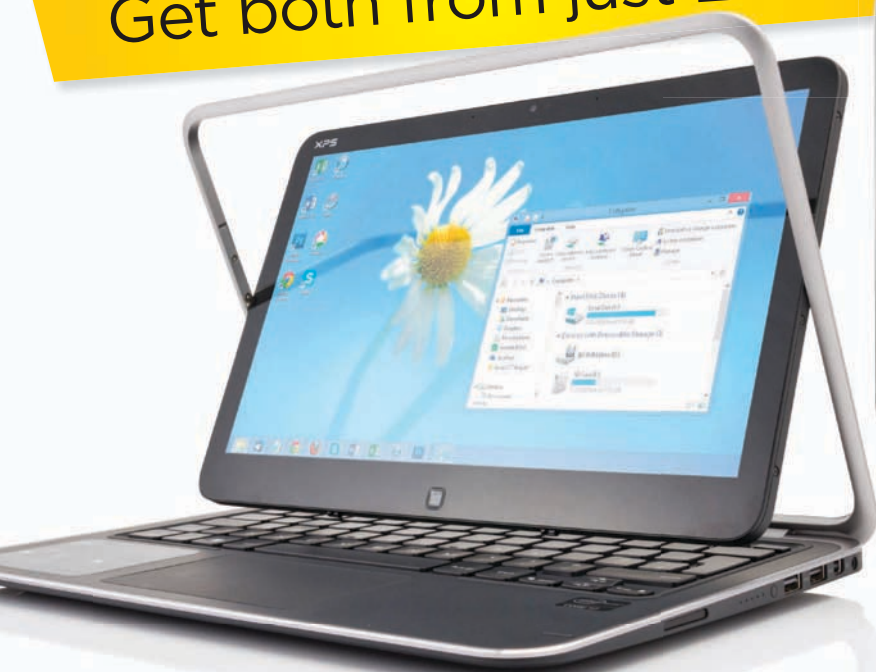
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MATT
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All PCs great and small

Competition, collaboration and innovation means tech-savvy consumers are in for a wild ride

Change is constant and rapid in technology, but the basic principles remain the same. We want tech to help us achieve and enjoy more, in the quickest and least expensive way. We want hardware that's functional but stylish, and software that's easy to navigate.

We all have opinions about which platform, format or brand is best. That fact doesn't change. But one of the great changes the internet has wrought is that where once our 100,000 print readers had to physically write in to express their views, now any of our 5.5 million readers can offer instant feedback. Trust me: you do.

We receive instant feedback from real-world consumers. But it can be confusing – for every person who chastises us for 'anti-Apple bias' there is another who accuses us of being in Apple's pocket. It's the same story with Microsoft, Google and the rest. We work hard to be objective, but we live in a world of opinions. You can't please everybody.

This is not a complaint: how brilliant it is that people care that much about tech. But it did mean that we undertook our comparative appraisal of the latest OSes from Microsoft and Apple with a sense of trepidation (page 78). Mac vs PC remains a controversial argument, and has been so since long before I started working as a tech journalist. Right now the balance is at a compelling point. Because of competition from the likes of Google and Amazon, the personal computing market is no longer a straight battle between mass-market Windows utility and premium OS X quality.

At a corporate level lies a strange set of competitive and interdependent relationships: Intel and Microsoft collaborate on laptops and tablets, but Microsoft wants to shift ARM-powered Windows Phones. Google software drives the Kindle Fire HD 8.9 (page 36), but also its own 7in competitor. And before you get carried away with the idea that Apple and Samsung are at each other's throats, consider the fact that Samsung is a huge provider of parts for iOS devices. Heck, Office for Mac is a great Microsoft cash cow.

For the consumer competition is good. Competitive innovation is producing a generation of intriguing products. We have been testing and reviewing touchscreen laptops (page 54) and tiny desktop PCs (page 62). It's fascinating not just that these product categories exist, but the variety within them in terms of features and price. I'm writing this on a Windows 8 laptop, and chose this Ultrabook over the Macbook Air for its touchscreen.

I never use the onscreen keyboard, but I interact with the screen via touch for web browsing, photo editing, PowerPoint and interacting with media apps. I didn't make a conscious decision to do so, it just happened.

It's unlikely that all the current big tech companies can survive and prosper. The more established is a business the slower is its innovation (Amazon rather than Borders or WH Smith made the leap from bookseller to tech giant). Some firms will fail, others will rationalise into lucrative but non-consumer facing businesses – the IBM model. Not all consumers are able to make informed choices when purchasing tech, but for those of us that can the next few years will be a wild ride.

Here's to competition, collaboration and innovation. ⊠

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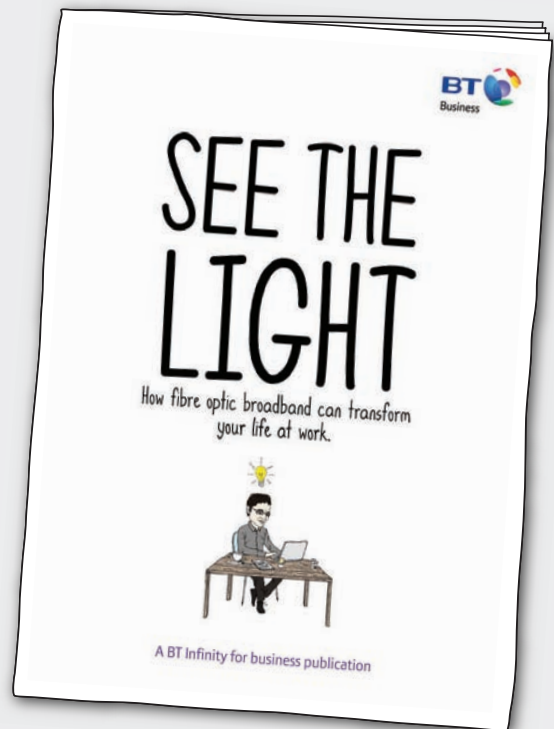
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Do you need a TV Licence?
In *Ditch the licence* (May issue) it is implied that a TV Licence is not required if you watch online.

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Just 0.2 percent of people watch TV solely online across an average week. Although new technology has given rise to alternative viewing methods, for most people online viewing supplements rather than replaces traditional viewing.

More information and advice is available at tvlicensing.co.uk or by calling 0300 790 6071.
Claire Wotherspoon, TV Licensing

pcadvisor.co.uk

Windows 9
With Microsoft now adopting a yearly release cycle for its Windows operating systems, we've turned our attention to what you might be able to expect from Windows 9. In Outbox (page 146) Jim Martin outlines his views, and suggests that Windows 9 might be the OS in which Microsoft removes the traditional desktop interface, entirely focusing on its finger-friendly Modern UI. We're not sure you lot are ready for such a change just yet (read more at tinyurl.com/bqobm89).

cwoxford: Most PCs don't have, nor ever will have, touch capability. Try painting on a touchscreen – almost impossible! Not to mention all the business programs that require a keyboard and mouse. Microsoft needs to accept that there will always be users who require a keyboard and mouse. Users should be given the choice of having a desktop and an OS that can be used properly with a keyboard and mouse should they so wish.

spam me: Microsoft has to start listening: the days of forcing Bill's will on everybody are gone – either it adapts or it fades away!

Erin Brady: If I want a tablet I will buy a tablet. A desktop is not a tablet, and in trying to make it one Microsoft has succeeded only in making it more confusing and complicated.

Murray Snudge: I recently bought a laptop running Windows 8, and I always use the desktop mode. I don't miss the Start button, but I would miss the desktop.

Brinkley Meerschwein: If Microsoft is daft enough to ditch the desktop then it must agree to indefinitely upgrade Windows 7 or 8. I'm never going to use a laptop, and if I can't have a desktop I shall just have to give up computing.

Flagged: Star letter

When an LED is really an LCD
Having read Steve May's review in your June issue I bought a Toshiba 46TL963 TV from Currys. The first line of this review states that it is an LED TV, but when I got it home I discovered it was an LCD TV. This was not only incorrectly described in your review, but also in Curry's product description. Had I known it was an LCD TV I would never have bought it. *Paul Akehurst de Visme*

Andrew Harrison, reviews editor, replies: Toshiba's website emphatically tells us this TV set uses an LED for its backlight, but the fact is it's an LCD TV. Such televisions are routinely and misleadingly sold as LED TVs. It's just a naff marketing term.

Until recently, most LCD panels used CCFL backlighting. Around four years ago we started to see those light sources replaced with white LED arrays, which can be made whiter, light up faster, and consume less electricity. Unlike CCFL bulbs, they do not dim and yellow with age either.

The fact these TVs were marketed as LED TVs made people think they had invented a new category of television. The confusion is rife throughout the industry, and we'll try wherever possible to clarify this mess.

Our Star letter writer wins a six-month subscription to Netflix. Sign up at Netflix.co.uk to watch instantly. For your chance to win, tell us your thoughts on any tech issue:

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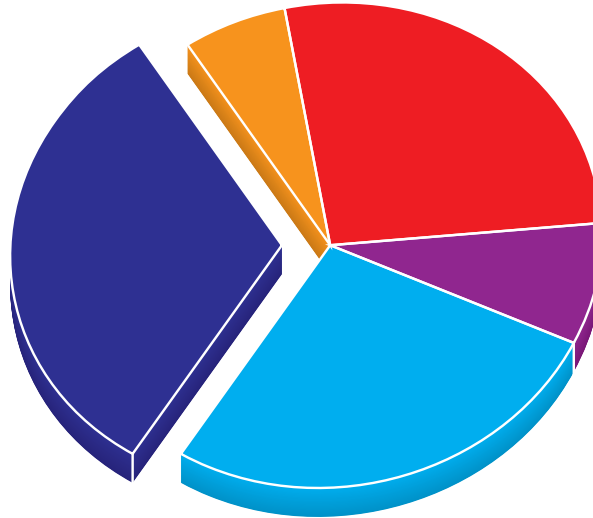
Based on 3,104 votes, tinyurl.com/btmg8af

Life without a PC

Ex plorer posed an interesting question in Speakers Corner: could you manage without a laptop or a desktop PC? Have your say at tinyurl.com/curg9d4.

Quickbeam Of course not, silly question. Ain't it?

Bing.alau I managed for more than 70 years without one, so I am sure I could still do so.

morddwyd Yes, I could, but why would I want to?

Cymro The time will come when life without a computer will be not just unthinkable, but impossible. Thankfully, most of us will be long gone by then.

Joseph Kerr I could probably manage without one today, but I'm keeping my desktop until they become very difficult to get hold of – by which time any issues that would come about through not having one will have been solved.

Forum Editor I can't think of a reason why I would want to manage my life without a laptop. At a pinch I suppose I could just about do it.

quiller I can survive a couple of weeks without a laptop and an internet connection. We make a rule never to take anything other than a basic mobile phone on our annual two-week holiday.

alan14 It's fine if you get decent coverage, but I find surfing the internet on a mobile painfully slow.

Noldi I think the question should be whether you could live without the internet. With a smartphone and an iPad, my laptop has been collecting dust for two years. ⊠

facebook.com/pcadvisor

Money for your messages

In April Facebook controversially began charging its users up to £10 to send a message to other members with whom they are not 'Friends'. The move has been made in an attempt to beat spam, according to the social-media giant. Your response to the news was mixed.

Antony D'Andrea: Shocking decision. I like to speak to people before adding them. Facebook is on its way to becoming the next MySpace.

Nathan Muirhead: Facebook needs to earn money, too!

Andy James: When you're sending a legitimate message to someone who may not be on your friends list for work-related reasons or you have a pending friend request, the ability to talk to them using Facebook is impeded. I have 10 threads in the Others tab of my inbox, and each constitutes necessary communication. Charging for all non-friend messages is not the way to go stop spam. It's only going to reverse what Facebook did for social networking.

Jasic Choudry: It's just another excuse to make more money. Keep your card details away from Facebook!

Alex Thomas: You can still send messages without being charged, but they will land in the recipient's inbox under the Other tab. Most people aren't aware of this as they haven't bothered to look at Facebook's different features. And it's not just with Facebook that this happens, but any social network, app and even some devices. Some people buy gadgets simply because they look good, but if you were to ask them about their features or what apps can be added they wouldn't have a clue.

Kindle smartphone

We've heard rumours that Amazon is planning to release a Kindle smartphone with a 4.7in screen in the second quarter of 2013. Following the success of its Kindle Fire HD and Fire HD 8.9 tablets, we were suitably intrigued; *Daniel Le Dosquet-Bergquist* was not. "Hell, no," he wrote. "Amazon takes the relative freedom of Android and walls it off to an Amazon-only experience. Yuck."

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WINDOWS 8 IS KILLING PC SALES

Analysts slam Microsoft's latest operating system as desktop PC sales fail to gain momentum

Microsoft's Windows 8 took another knock as research firm IDC laid much of the blame for the first quarter of 2013's low PC sales at the feet of the beleaguered OS.

IDC's estimate for first-quarter PC shipments painted a gloomy picture of the industry. It said the 14 percent year-on-year decline was the largest it had witnessed in its nearly two decades of tracking. According to IDC, 76.3 million PCs were shipped worldwide.

Research firm Gartner has pegged the global downturn slightly lower, at 11 percent. HP and Lenovo remain the top two PC manufacturers, it said.

While the drop was expected – IDC, for example, had forecast a more favourable 8 percent contraction year on year – the figures had one analyst searching for words. "It's brutal," said IDC's Bob O'Donnell. "These are disastrous numbers."

Death by Windows 8

O'Donnell was one of the IDC analysts who blamed Windows 8 for the unprecedented fall-off in consumer PC purchases during the quarter. "At this point, unfortunately, it seems clear that the Windows 8 launch has not only failed to provide a positive boost to the PC market, but it appears to have slowed the market," he said.

In a statement that accompanied the firm's estimates, O'Donnell ticked off a now-familiar litany of Windows 8's confusing traits that caused consumers to shy away from new PCs, including the bold-but-radical move to the tile-based Modern UI, the removal of the Start button and menu from the Classic desktop, and the touch-first strategy Microsoft's taken.

> ## The Windows 8 launch appears to have slowed the market

The increasing popularity and affordable prices of devices such as tablets was also to blame, according to IDC. "Microsoft is going to have to make some very tough decisions moving forward if it wants to help reinvigorate the PC market," said O'Donnell.

Coincidence or not, the news came on the same day as rumours suggesting Microsoft is planning to launch a 7in version of its Surface tablet to combat the success of devices such as the Apple iPad mini and Google Nexus 7. There are also rumours that the firm will make its own smartphone.

IDC analyst Jay Chou also cited Windows 8 for contributing to the decline in PC shipments. "Users are finding Windows 8 to offer a compromised experience that doesn't excel either as a new mobile interface or in a classic desktop interface," he said. "Many consumers are worried about upgrading to Windows 8."

Other factors at fault

However, IDC's David Daoud suggested that Windows 8 was only one of several factors to contribute to the downward spiral. He mentioned several other contributors, including a general saturation of PCs, especially in developed countries such as the US, the fact that PCs bought since 2008 or 2009 remain good enough for what consumers want out of a desktop or laptop, and stagnant economic conditions in some parts of the world.

In some places, the downward turn is the new normal: the US has posted smaller shipments year on year in nine of the past 10 quarters. Globally, the first quarter of 2013 is the fourth consecutive to record fewer shipments than the year before.

Daoud rejected the idea that the industry is seeing the death rattle of the PC. "Do we need the PC? Definitely. They're going to be around for a while."

INTEL BAY TRAIL TO POWER BUDGET CONVERTIBLES

Forthcoming Atom processor will enable budget laptops and tablet hybrids with all-day battery life

Intel's forthcoming 'Bay Trail' Atom CPU is aimed at the low-end market, and promises to deliver convertible PCs and laptops with all-day battery life at budget prices.

"We think this is going to significantly expand the volume of Intel architecture-based systems, both for Windows 8 and alternative operating systems," said Kirk Skaugen, general manager for Intel's PC client group.

Previously, Intel said its Bay Trail Atom chip was meant for tablets,
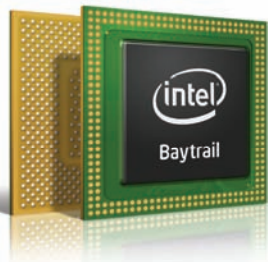
but the firm now says that convertible and detachable PCs, along with desktops, will use the processor. Skaugen expects such products to cost less than $599 (£400).

Bay Trail is successor to Intel's 'Clover Trail' mobile processor. It uses an entirely new microarchitecture, which is designed to be both faster and more power-efficient. The new chips allow for fanless designs, and can contain up to four cores. Products built with Bay Trail are expected to launch by the end of this year.

The new processors were announced as Intel tries to revive lagging PC sales. Increasingly, consumers are buying Apple and Android tablets built with processors from rival chip maker ARM.

Intel's fourth-generation Core processor, codenamed 'Haswell', will also launch this quarter. The company said the chip will accommodate up to nine- or 10-hour battery life in laptops. Together, Intel hopes Bay Trail and Haswell could help the company better combat ARM's dominance, according to Bryan Ma, an analyst at IDC.

Rumoured 'Facebook Phone' arrives

Facebook Home overlays Android with social-network content

Facebook in April announced the much anticipated 'Facebook Phone'. More precisely, it unveiled the HTC First, which is the first phone to come preloaded with Facebook Home. This Android app allows Facebook to take over the OS in a new way.

"Today we're finally going to talk about that Facebook phone," said Facebook founder and CEO Mark Zuckerberg. "Or, more accurately, we're going to talk about how you can turn your Android phone into a great social device."

Facebook Home replaces the traditional Android Home screen and lock screen with

its own Cover Feed, which displays visual- and text-based updates from the social network. Another key feature is Chat Heads, which puts onscreen a small circle containing a picture of a Facebook friend whenever they send you a new message. You simply tap the picture to begin chatting, no matter what app you're in.

The free Facebook Home app is available from Google Play for the HTC One X, HTC One X+, Samsung Galaxy S III and Galaxy Note II. It will soon be available for the HTC One, Samsung Galaxy S4 and other devices. EE will release the HTC First this summer.

Samsung smart watch coming soon

Wearable technology looks set to be the next big mobile trend

Samsung has confirmed that it will follow the current trend and release a smart watch.

A Samsung executive, speaking to Bloomberg, has let slip that a wearable gadget, presumably with Galaxy branding, is definitely on the way.

"We've been preparing the watch product for so long," said Lee Young Hee, executive vice president of Samsung's mobile business. "We are working very hard to get ready for it. We are preparing products for the future, and the watch is definitely one of them."

Unfortunately, Lee did not give any further details on when the Samsung smart watch would go on sale or its pricing. Nor did he give any indication of what features it will offer.

The news comes after rumours that Samsung's main rival, Apple, is also working on a smart watch design to accompany the iPhone. Google is expected to launch its smart glasses, called Google Glass, this year, and is also rumoured to be developing a smart watch.

Mockup image for illustration purposes only

Sky Sports goes pay-as-you-go

Sky is for the first time offering its Sky Sports package on a pay-as-you-go basis. Users are able to access live sport footage using the firm's Now TV internet streaming service on various devices, including the PC. A one-off cost of £9.99 with no subscription or contract pays for 24 hours of access to all six Sky Sports channels, including Sky Sports F1.
MORE: tinyurl.com/ccz3sw6

O2 customers get free Wi-Fi on Tube

From June O2 customers will be able to access free Wi-Fi on the London Underground. The operator has struck a deal with Virgin Media, which runs the Tube Wi-Fi network. The move means that Three is now the only network not offering the deal to its customers.
MORE: tinyurl.com/cjdgsad

BT Broadband wins another rural deal

Hampshire County Council is the latest body to award BT a government-sponsored rural broadband deal, this time worth £10m. At least 90 percent of all premises will have access to 20Mbps super-fast broadband by the end of 2015.
MORE: tinyurl.com/czo7upr

EE DOUBLES SPEED & CAPACITY OF 4G NETWORKS
Holds back faster 4G speeds for a network 'upgrade'

EE is doubling the speed and capacity of its 4G LTE network in 10 major cities in the UK.

The UK's only 4G network will increase its headline speeds to 80Mbps, with users expected to see more than 20Mbps on average. EE will roll out the improvements to cities across the UK during the summer, and said it plans to connect one million customers by the end of the year.

Rather than using spectrum it acquired in the 4G auction, EE is doubling the 1,800MHz bandwidth from 10- to 20MHz. Theoretically the firm could have done this from the start, but it appears to have saved it until now as an 'upgrade'.

Olaf Swantee, CEO of EE, said: "We are ensuring that the UK remains at the forefront of the digital revolution. Having already pioneered 4G here, we're now advancing the country's infrastructure again with an even faster, even higher-capacity network, and at no extra cost to our customers."

The 10 cities to get the speed and capacity boost are Birmingham, Bristol, Cardiff, Edinburgh, Glasgow, Leeds, Liverpool, London, Manchester and Sheffield.

The network will begin testing LTE-Advanced by the end of the year, and aims to be of the first networks in the word to offer speeds of up to 300Mbps. EE's network now reaches half of the UK's population and will increase to 55 percent by June.

EE has also launched a 50-strong fleet of 4G-enabled taxis in London and Birmingham, allowing travellers to get online for free.

4G's IMPACT ON FREEVIEW TV IS LOWER THAN EXPECTED

The first tests with 4G LTE over the 800MHz band have shown less interference with 700MHz Freeview television broadcasts than expected.

The firm behind the testing, at800, has completed its first live test using 800MHz 4G LTE. It said 15 households were affected, which is eight times fewer than the 120 it predicted.

4G networks from O2, Vodafone and Three using the 800MHz spectrum will be launched this year. EE is currently using the 1,800MHz band for its 4G LTE service.

Simon Beresford-Wylie, chief executive of at800, said: "This was a useful, small-scale test. We'll now improve our forecast model and look at the approach we use to tackle the issues we've seen."

Around 22,000 homes in close proximity to the 4G test masts were asked to make contact if interference was experienced. More than 100 calls were logged.

A larger-scale test covering 170,000 homes in south-east London began on 15 April.

Three in no rush to launch its 4G network
Firm will allow competing mobile operators to make the first move

Three has announced that it will launch its 4G LTE mobile broadband network during the fourth quarter of 2013, much later than expected.

CEO Dave Dyson said Three wants its rivals to take the plunge first. "We're in no rush to launch LTE. We'll see how 4G is positioned by O2 and Vodafone and look at how we position it," he said.

"I think it's going to be toward the end of the year before we launch 4G LTE as a technology. Right now the latest version of 3G and the early versions of LTE are not dramatically different, and I am confident that our customers are getting the right experience," he added.

Three is happy with its 'Ultrafast' 3G network, which allows download speeds of up to 42Mbps. Although it seems Three customers will have to wait a bit longer for 4G, the good news is that the telecoms provider has already said it won't charge extra for the service. ⊠

Career gaming

Martyn Casserly investigates the next generation of sports entertainment, in which a new breed of gamers can earn a living shooting zombies

V ideo games are competitive by nature. Whether you're fighting to rid the galaxy of aliens hell bent on the destruction of humanity, threading a delicate pass to the feet of a digitally rendered Lionel Messi, or simply sacrificing a pawn in the hopes of cornering your opponent's king, the end goals for which you strive will determine whether you emerge as a victor or victim.

Whereas most of us play these games for fun, there are those who take things a bit more seriously – so much so that they've made it their career. Professional gaming (also known as eSports) is a fast-growing industry that attracts premium corporate sponsors and impressive crowds, and provides the skilful few with a chance to compete for serious prize money.

Organisations such as Major League Gaming, GOMtv and World Cyber Games hold huge tournaments, attended by professional teams from around the world and streamed live over the internet to millions of viewers. In common with any other professional sport, commentators discuss players' tactics and their effectiveness. The proponents of competitive gaming see it as the next generation of sports entertainment.

"Statistically it's growing faster than any other sport out there and is becoming a global phenomenon," says Patrik 'cArn' Sattermon, retired pro-gamer and chief gaming officer at team Fnatic. "There are around 75 million hardcore fans on the planet right now, and that means people consuming eSport media, talking about the players and following the events. We have travelled from the basement to great exhibition halls and even sports venues."

Some 20,000 fans witnessed contestants in a recent US tournament battle for victory on stage. This is the equivalent of selling out London's O2 arena, and higher than the average crowd attendance of most UK Championship football matches. eSports is now garnering interest from traditional broadcasters, with news stations in some countries beginning to include results in their bulletins.

Patrik offers Sweden as an example, in which the two main media groups now run their own events. He says they have an interest in the games not only because they are running them, but the public service (equivalent to the UK's BBC) are active in setting up livestream studios and physically following the events. "Before it was like 'we're following this new trend, and here's what the kids are doing today'; now they are following it as a sport, which is a drastic change," says Patrik.

Call of Duty Tournament

A measure of how far the eSports industry has come is the Call of Duty Tournament announced by Activision this year. The prize pool amounted to a cool $1m, with $400,000 going to the four-player team that took the title.

"More people play Call of Duty multiplayer every day than watch the average regular season game of the NBA," says Activision CEO Eric Hirshberg. "The scale and passion of the Call of Duty fanbase is simply humbling, and until now there was no formal way to find out who

among those millions of players is the best of the best. Watching the performances of the very best Call of Duty players is already a mass spectator sport on YouTube and Call of Duty Elite."

Hirshberg hints at one of the major difficulties eSports needs to overcome if it is to capitalise on the explosive growth of recent years: fragmentation.

"In the long term we can see eSports being part of the Olympics or having very well-organised tournament structures, with a world cup, local qualifiers and such like," reveals Patrik, "but, right now, the tournament organisers aren't interested in co-operating with anyone else, because everyone is fishing for the same money. There are a few mainstream sponsors, and we're all trying to grab them, but still a great chunk of eSports is backed by gaming gear producers, monitor manufacturers, PC manufacturers or Intel processors.

"In the future we may set up a gaming association equivalent to football's FA. We can look at setting up a world cup, a very defined ladder where people can go from amateur to professional, unified

contracts and so on. At this point I think you'll see it on television, but that isn't necessary for now: livestream is fulfilling its purpose," says Patrik.

Teaming up online

Whereas the majority of professional sports are tied up behind network paywalls, eSports fans primarily access the action through the internet, which can be an advantage when growing global interest.

Teams have their own Youtube channels, which display highlights of past matches, team blogs, and even player-cam-style episodes that show how individual players tackle certain challenges. This allows a very high level of interaction between the players, teams and fans, which is essential for increasing the team's fanbase and attracting the best new players. Traditional sports teams have the advantage of history or geography to capture fans; as eSports is still so young and the location of teams so nebulous, teams have to work hard to make fans adopt them as their own.

"This is something new," says Patrik, "and in many areas completely different to any conventional sport. We are learning and failing, then learning from our failings.

"There are great examples of teams such as Na'Vi in the Ukraine, which has a lot of fans from Russia and Ukraine who don't have any other professional teams to support. Na'Vi is representing that region in an attempt to overcome the West or the East," says Patrik.

"I think Fnatic [Patrik's own team] lacked identity: at one point we were

represented by players from 15 different countries. So we got some local support, but mainly tried to promote ourselves as a successful team by doing cool stuff for the community and winning titles.

"Sometimes we also participated in promotional tours. For example, in 2006 we were one of the few foreign teams who travelled to China and played a lot of domestic tournaments. That has contributed to our reputation over there, so we have a great fanbase.

"It's about timing, but you must also do stuff that gets the fans involved, such as promotions and social media. We probably started using social media earlier than Manchester United FC. We grew from ones and zeros, we've always been online," continues Patrik.

Although there have been videogame tournaments running from as far back as the early 80s, the modern internet-powered version is a far more sophisticated endeavour. If the current rate of growth continues then eSports could

become a powerful force in the world of entertainment, and provide a legitimate career path for those who have the ability and carpal-tunnel-resistant bodies to stay the course. Unlike pretty much every other professional, competitive sport, eSports also offers something truly unique in the make-up of its players.

"What I think is particularly good about eSports," concludes Patrik, "is that it's the only sport in which you can compete against anyone. It's cross-gender and cross-nation. You can be a disabled person and still compete. eSports activates everybody – it is for everyone." ⊠

Mixed response to Samsung Galaxy S4

Advanced Samsung Galaxy S4 features may overwhelm some users, according to some industry experts. Agam Shah reports

For Samsung the Galaxy S4 is full of promise, with its spectacular hardware and software features, and the company hopes to sell millions of units of the smartphone.

However, analysts have questioned how often some of the handset's richer features will be used in the real world. Language translation, a dual-camera function that simultaneously snaps shots with the front and rear cameras, and a technology that tracks eyes to pause a video or scroll down an email or web page are not the sort of features everyone will turn to daily.

Samsung is packing many features into mobile devices to see what sticks, said Jack Gold, principal analyst of J Gold Associates. "Will I use a camera that follows my eyes to see where I'm looking? I'm not sure," he said.

The Galaxy S4 was announced at a glitzy event at New York's Radio City Music Hall in March. In the vein of Broadway musicals, many of the new smartphone features were explained on stage through performances by professional actors and dancers.

The Galaxy line-up, which includes several smartphones, phablets and tablets at different prices, has helped propel Samsung to become the world's largest smartphone vendor in 2012. According to Gartner, Samsung sold roughly 206 million smartphones in 2012, outpacing Apple, which sold 130 million units, and Nokia, which was a distant third with sales of 39 million smartphones. In 2011, Samsung was the world's second-largest smartphone vendor behind Apple.

Light years ahead

The S4 is considered a vast improvement over its predecessor, the Galaxy S III. It has a 5in Super AMOLED display with 441 pixels per inch, a 13Mp rear camera and a 2Mp front camera. The smartphone weighs 130g and is 7.9mm thick. Depending on the market, the Galaxy S4 will come with either a 1.9GHz quad-core processor or a 1.6GHz Samsung Exynos 5 eight-core chip. Other features include up to 64GB of storage, 2GB of low-power DDR3 RAM and 802.11ac Wi-Fi.

Everybody wants "whizbang gizmos", but most of the fancy features in the S4 may go unused, Gold said. Smartphone usage still revolves around email, apps, phone calls and light web browsing. But the S4 will sell millions of units, and will please discerning Android users seeking bragging rights for the latest and greatest features.

"To a large extent, the mobile market has turned into a game. It's more about upmanship," Gold said.

But it won't do much to attract Apple iPhone users, he added. "In the end, does it really pull across competitive users? I'm not sure it will," Gold said.

Samsung & Apple

Samsung's development philosophy is very different to that of Apple, which has the forte to keep things simple, said Will Stofega, program director for mobile device technology and trends at IDC.

"There are two different philosophies. Samsung is clearly cutting-edge stuff and appeals to first movers," he said. "It certainly is trying to out-feature everybody."

Apple's iPhone attracts buyers because it is simple and usable, but the company's stubborn exclusion of certain features has hurt some consumers, Stofega added.

"Apple doesn't want to have simple features such as SD cards," he said. "That's to the detriment of its user base."

Many of the advanced features in the S4 may become more important in time, noted Stofega, who offered the Galaxy S-Pen stylus as an example. This was dismissed by critics when it was introduced a few years back, but the accessory is now important to users of Galaxy Note products.

Some of the advanced features may ultimately trickle down to Samsung's lower-priced smartphones, said Carolina Milanesi, research vice president at Gartner.

"It's going to be more and more about the features and approach. The hardware is getting incrementally better," Milanesi said.

Samsung sells many smartphones at different price ranges, using multiple operating systems including Android, Bada, Windows Phone and, in the future, Tizen.

The gaggle of features provides more usage options, but they need to work seamlessly in the device. "The features have the wow factor, but do they work flawlessly?" Milanesi asked.

Samsung will also require the help of developers to push some of the new features into its other smartphones that use non-Android OSes such as Tizen. ⊠

BlackBerry ships 1m Z10s in move to profit

With the release of its Z10, the troubled BlackBerry maker is finally reporting some healthy sales figures. Mikael Ricknäs takes a closer look

Research In Motion, now doing business as BlackBerry, shipped about 1 million BlackBerry Z10 smartphones during its fiscal fourth quarter.

Anything more than a million Z10 sales in the quarter can be considered a success for BlackBerry, but anything less would have been disappointing, according to research firm Ovum. The Z10 is the first BlackBerry device to run the brand-new BlackBerry 10 operating system.

Of course, the Z10 is just one of many handsets delivered by BlackBerry, which shipped a total of 6 million smartphones in the quarter. Revenue in its fiscal fourth quarter, which ended on 2 March 2013, was approximately $2.7bn, down 36 percent from the same period in 2012. Net income from continuing operations for the quarter was $94m, compared to a net loss of $118m during the previous year.

BlackBerry also had about 76 million subscribers, compared to 79 million during the previous quarter.

Farewell Lazaridis

Now faced with a fresh challenge, the firm announced that Mike Lazaridis has retired as vice chairman and a director of the company. Lazaridis co-founded BlackBerry nearly 30 years ago and served as a co-CEO of the company until last year.

"Lazaridis revolutionised the mobile communications industry when he invented the BlackBerry and he is widely recognised as one of Canada's greatest innovators," said BlackBerry CEO Thorsten Heins.

While Lazaridis deserves a lot of credit, he and former co-CEO colleague Jim Balsillie, who retired last year, were unable to swiftly reply to the onslaught from Apple's iPhones and Android-based smartphones.

The announcement of the first shipment figures for the Z10 was a momentous occasion for the company, as BlackBerry tries to claw its way back in the smartphone market. However, since the phone has only recently gone onsale in the US, it is too early to draw any major conclusions from the figures.

"The Z10 hasn't been on the market for the full quarter, first of all. Second of all, and more significantly, the US launch isn't reflected in the results. Also, the Z10 is just

> **Lazaridis, co-founder of BlackBerry, is widely recognised as one of Canada's greatest innovators**

one in what will be a long line of products in 2013," said Geoff Blaber, who leads mobile device software research at CCS Insight.

There also have been supply constraints in markets where the phone has been launched, meaning that even if people wanted to buy them they haven't necessarily been able to. Plus the second BlackBerry 10 smartphone, the Q10 (which has the classic BlackBerry physical keyboard) won't go on sale for some time, so many of the prime candidates for buying a BlackBerry 10 device will be waiting for that.

The first true referendum on BlackBerry 10's success or lack thereof will come after the current quarter, Ovum said.

More to come

Heins underlined that what the company has done so far is only the beginning. The Q10 will start shipping in April, and the company is also working on less expensive BlackBerry 10-based smartphones. At least one mid-range handset is expected in various markets around the fiscal mid-year.

The company also continues to investigate potential licensing opportunities and the use of its new platform in areas other than smartphones, including the automotive sector, according to Heins.

Analyst Blaber had another suggestion for a priority: "The first thing it needs to do is to ensure that the existing subscriber base that have been on older BlackBerry 7 products start to upgrade, and see the value with BlackBerry 10."

Operators lay groundwork for worldwide 4G

US telco Verizon plans to offer 4G LTE roaming in several countries early next year, says Mikael Ricknäs, with other operators also planning to roll out the service

More subscribers, networks with better coverage and devices that can be used in more countries are converging to make 4G LTE roaming a more viable proposition. Some operators are already offering such services on a limited scale, and there are more on the way.

"At Mobile World Congress members of our executive and global roaming teams were actively seeking roaming partners. We want to offer our customers 4G LTE when they are travelling and also offer customers of overseas providers the option to roam on our network," said Tom Pica, executive director of corporate communications at Verizon Wireless.

The first fruits of those deliberations will come in early 2014 when Verizon will start offering its subscribers LTE roaming in several countries, including Canada.

Outside the US

TeliaSonera is the first to offer LTE roaming in Europe, allowing Danish users to access LTE in Sweden. The next step will be to add more countries where it has its own networks, but roaming deals with other operators are also in the works.

"I wouldn't be surprised if we are ready to roam with an external operator this year," said Tommy Ljunggren, vice president of system development at TeliaSonera.

Both Telstra, which is based in Australia, and TeliaSonera are charging the same for LTE and 3G roaming. The Australian operator announced a deal with its subsidiary CSL in Hong Kong earlier this year, and is working on similar agreements with operators in other countries.

Supported frequencies

The spectrum bands supported by devices determine the countries in which users can roam, assuming agreements are in place between operators. Phones such as the Galaxy S4 and Xperia Z are leading the way by implementing up to six LTE bands.

The most commonly used frequencies are 1,800MHz and 2,600MHz, which provide coverage in about 80 percent of the countries in which commercial LTE services are available, said Alan Hadden, president of GSA. That includes Europe, parts of Africa, Asia and South America.

Those two bands will be supported by the European LTE version of the Galaxy S4 and Sony Xperia Z, which can also access LTE networks on the 800MHz, 850MHz, 900MHz and 2,100MHz bands. Their addition provides better coverage in Europe and Asia. The 800MHz band will play an important role in Europe, because of the good coverage characteristics it offers, Ljunggren said.

Then there's the 700MHz band, of which different parts are used by US operators

Verizon and AT&T Mobility. In the short term European and Asian operators must choose with which US operator they should align.

Devices that have implemented AWS spectrum (1,700MHz and 2,100MHz) will also be able to access LTE in the US.

Helping hand

Enabling data roaming on LTE hasn't been easy, according to Martin Guilfoyle, vice president of new products and R&D at Syniverse. Operators that want to offer LTE roaming can either connect directly with each other or turn to an intermediary such as Syniverse and connect to multiple other operators via their platform.

Guilfoyle has been working on this for close to three years, and last year culminated in a trial and proof-of-concept that has now been turned into a production environment.

The current situation reminds him of the early-90s GSM rollout. "There were pockets of roaming, and suddenly everybody and their cousin wanted to have a roaming agreement with everybody," Guilfoyle said.

For operators, offering LTE roaming comes with both potential risks and rewards. That services have been slow to materialise has more to do with commercial considerations than network complexities, according to Mark Newman, chief research officer at Informa Telecoms & Media.

"Operators are concerned that if they don't get the pricing structure right, LTE roaming could cannibalise their revenue from voice and SMS roaming," Newman said.

One threat is from services such as Skype, Whatsapp and iMessage, which are already putting pressure on operator revenue, and will work even better on LTE.

Operators also want to get their hands on revenue that is lost when subscribers travel abroad and connect using local networks.

"Business users spend a lot of money on Wi-Fi connectivity in hotels and at airports when roaming abroad, and operators should really be able to capture that revenue," Newman said. ⊠

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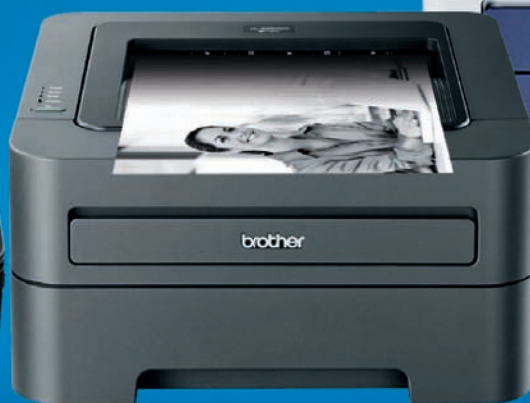
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New ICANN CEO will keep the internet open

Mikael Ricknäs meets new ICANN CEO Fadi Chehadé, and finds he is taking the soft approach to appease countries such as China

I CANN's CEO, Fadi Chehadé, is on a mission to help politicians around the world understand the importance of keeping the internet intact and open. He is also working to bring home the addition of generic top-level domains.

ICANN co-ordinates the DNS and IP addresses, which are the cornerstones that keep the internet going.

"I sincerely believe that we have an opportunity in the next few years to keep the internet as one internet. I believe this is worth my time and a lot of my effort and, frankly, it makes for a great mission," Chehadé said in an interview.

The internet runs the risk of becoming balkanised due to ill-informed national policies, said Chehadé. To secure the internet's future he has begun his tenure with a globalisation campaign, because until now the organisation hasn't done enough to reach out and engage beyond the borders of the US and Europe, he said.

"I have been on the road visiting as many delegations and countries as I can to engage and open up our model," Chehadé said.

ICANN's efforts to become a more global organisation comes after last year's World Conference on International Telecommunications (WCIT), in which countries such as Russia and China lobbied to change the way the internet is governed.

For Chehadé, the meeting highlighted the need for more education about how ICANN works. Some attending ministers didn't even know what ICANN was, he said.

Chehadé wants to have countries such as China on his side and believes he will succeed at this not by lecturing, but by illustrating the internet's upsides.

"We have to show the fruits and benefits of an open internet – that is what will get the message across. The leaders of China fully appreciate and understand how the internet is transforming them and helping them reform their system," Chehadé said.

> ## I sincerely believe that we have an opportunity to keep the internet as one internet. It makes for a great mission

Worldwide expansion

As part of its globalisation, ICANN has announced an African expansion, which includes plans for six new representatives that will involve North, South, East, West and Central Africa, and the Indian Ocean.

The continent also needs a large increase in the number of accredited domain name registrars. Currently there are only five, and Chehadé said he wants to see that number increase five-fold in less than two years.

The work isn't just about allowing Africa to catch up, but to leapfrog other parts of the world. The success of mobile banking in eastern Africa illustrates the power of the internet, according to Chehadé.

"On the streets of Nairobi you can buy a phone with full internet access for $50. That is changing the game in Africa," he said.

Asia is another part of the world that ICANN has to work more with going forward. So far its participation in ICANN has been minimal. But rapid growth of internet users now makes Asia a critical part of the organisation's globalisation. Part of that process for ICANN involves distributing its headquarters around the world. Every department will have core members in Singapore, Istanbul and Los Angeles.

While the globalisation effort is about protecting the internet as it currently functions, ICANN is now also in the home stretch of its effort to increase the number of gTLDs, which will add more suffixes to domain names. One of the most contentious examples is amazon.book.

More than 1,900 applications for gTLDs have been received and the objections period has now ended. Publishing industry groups and Barnes & Noble have voiced their discontent with applications from Amazon for domain names such as .book. Allowing a single private company to secure exclusive use of that string would defeat the purposes for which new gTLDs are being authorised and is not in the public interest.

The first approved gTLDs will be announced in the very near future. ICANN started accepting applications in December last year and Amazon's .book application has prioritisation number 890. On top of the list is .catholic in Chinese, followed by Amazon's application for .store in Japanese and .net in Arabic.

ICANN was also set to open the first global trademark clearinghouse as we went to press, which will allow trademark holders to protect their rights during the DNS expansion. The first new gTLDs will make their appearance in web addresses in the middle of the year, according to Chehadé.

"We are going to deliver this program. I want the world to be confident that we are not going to jeopardise the stability and the security of the internet, but at the same time we are not going to slow down the innovation that will come with the expansion of the DNS," Chehadé said.
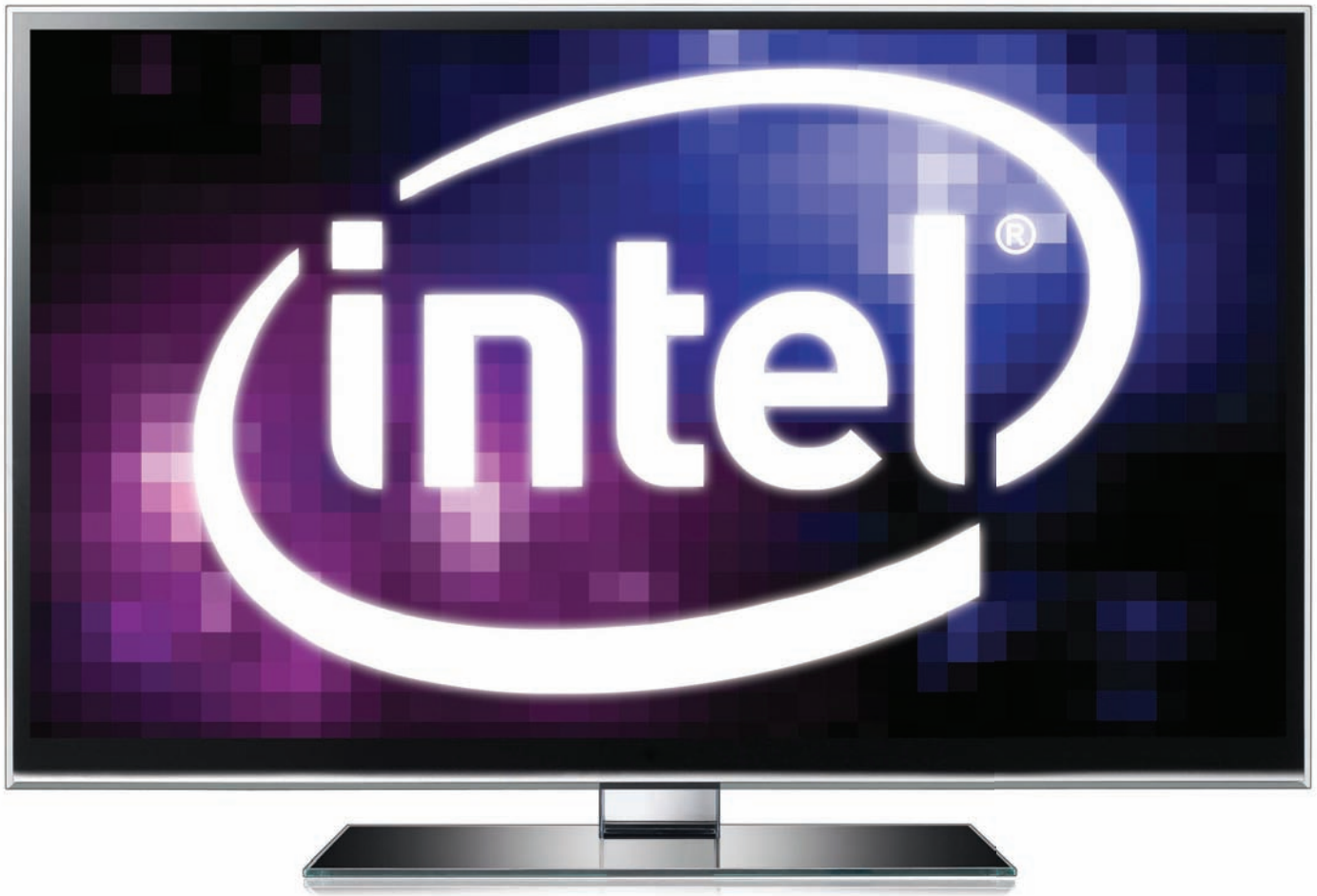
Intel gets into the TV business

Intel says there is an opportunity to package internet and TV content in a single bundle. Agam Shah explains

Intel aims to deliver more targeted packages of TV and internet content at different price points through its forthcoming TV set-top box, which will better address user needs than bundles offered by cable TV and satellite companies.

Later this year, Intel will release a set-top box that will deliver live TV and on-demand content through a customised web user interface. The set-top box could replace cable TV boxes, Apple TV or Roku boxes, and will also deliver TV and internet content to tablets and smartphones.

The TV box, which is yet unnamed, is being tested in the homes of some Intel employees on the US West Coast, said Eric Free, vice president and general manager of content and services for Intel Media.

Improving the user experience

Consumers have different viewing needs, and cable and satellite TV companies load packages to include channels that customers may not want. Intel will instead offer a wider range of packages of targeted content, Free said.

Intel is partnering with online and broadcast companies to deliver content through its box. Intel has said it is open to the idea of working with cable companies.

"We think there's an opportunity to bundle in a smart way," Free said.

The company announced the TV box just a month ago, and has not revealed packages or pricing. But Intel does not want to try to underprice existing services, Free said.

In a question and answer session after his speech, Free acknowledged that there could be an opportunity to drive content bundles that could be inexpensive compared to packages available now, though Free said that wasn't the goal.

There is an audience who can't afford cable TV, but the set-top box is targeted more at younger audiences who want convenient access to live, on-demand and internet TV content in a single box, Free said.

The box will bring social media, gaming and other online activities to the living-room TV-watching experience.

"We are more interested in solving problems for the younger audiences

who are deeply dissatisfied with what they are getting," Free said.

Intel's advantage

Intel has an early advantage as products such as Roku and Apple TV either don't offer live TV or offer it in a limited fashion, and satellite and cable boxes are not yet designed to handle online content.

The TV box is being made by Intel's Media Group. The chip maker faces challenges as it moves into a market in which device makers, TV companies, content providers and cable and satellite firms are jostling for control of TV sets. Intel has rarely released products directly to consumers, which has raised questions about whether it will succeed.

But Intel has moved fast in making the device, and Free said the time is ripe for delivery of TV content over the internet.

Content compression techniques are improving, and the internet download speed will quadruple by 2015, Free said. Citing a Cisco study, Free said that in the future more than half the internet bandwidth will be taken up by video streams. ⊠

CHRIS
MARTIN
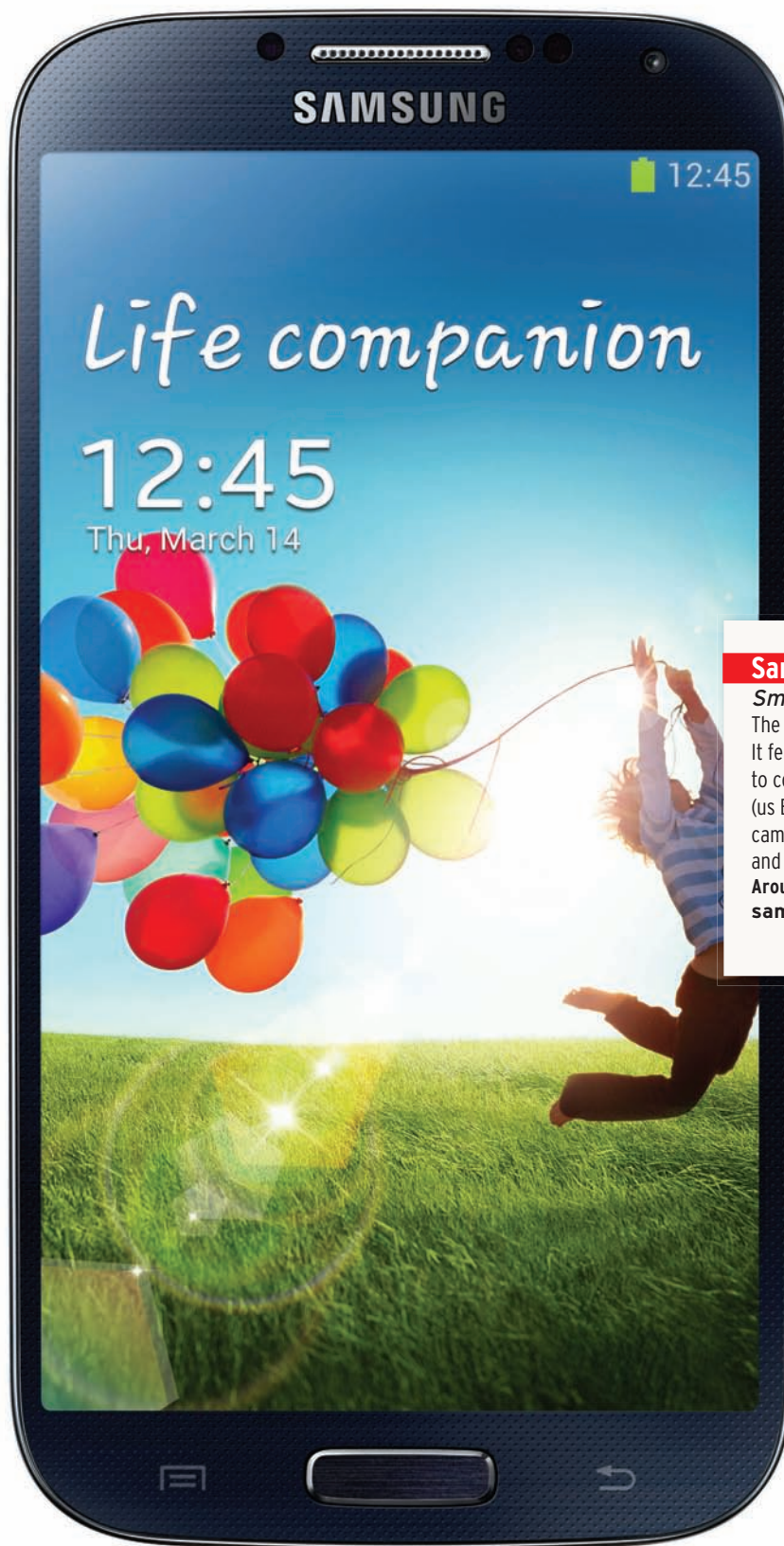
Samsung Galaxy S4 «

Smartphone

The Galaxy S4 is Samsung's latest flagship smartphone.
It features a 5in full-HD screen and is the first handset
to come with an eight-core processor in some markets
(us Brits will get 'only' four cores). It also has a 13Mp
camera, an infrared sensor for controlling your TV,
and runs Android 4.2 Jelly Bean.

Around £600 inc VAT (SIM-free)
samsung.com/uk

Razer Blade «

Laptop

If you're in the market for a thoroughbred gaming laptop the Razer Blade is worth a look. It has a large 17.3in full-HD screen and is powered by an Intel Ivy Bridge processor. It's just 22mm thick and is equipped with 8GB of memory and an nVidia GeForce GTX 660M graphics card. See our next issue for a round-up of gaming computers. **Price TBC ($2,499 US)**
razerzone.com/gb-en

» Dell XPS 18

All-in-one PC/tablet

Like Sony's Vaio Tap 20 (reviewed on page 32), the Dell XPS 18 belongs to an emerging category of PC. It's an all-in-one Windows 8 machine with an internal battery that lets you use it tablet-style away from the mains. Adjusting the kickstand feet lets you view at various angles the 18.4in full-HD display. **£849 inc VAT**
dell.co.uk

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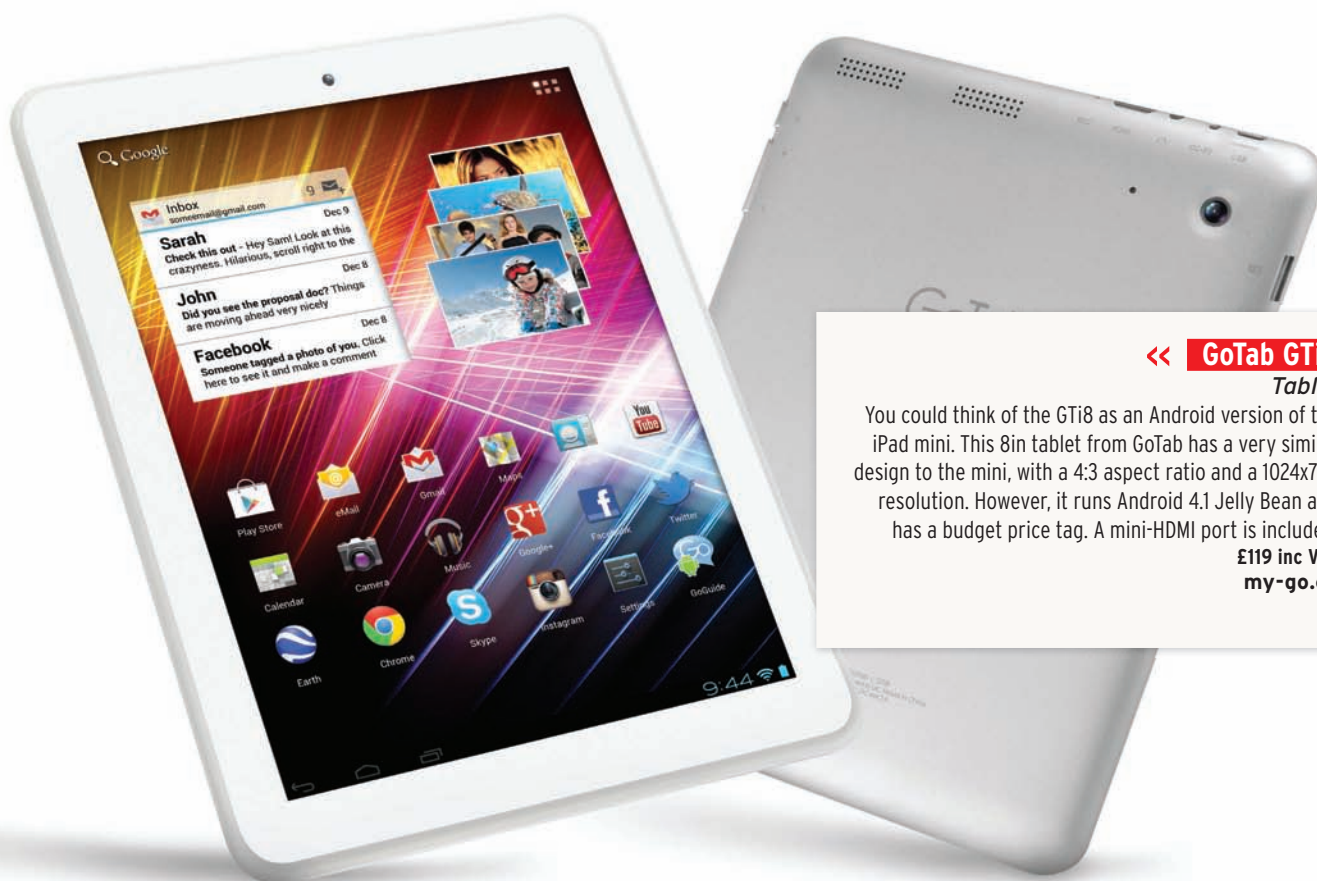
GoTab GTi8
Tablet
You could think of the GTi8 as an Android version of the iPad mini. This 8in tablet from GoTab has a very similar design to the mini, with a 4:3 aspect ratio and a 1024x768 resolution. However, it runs Android 4.1 Jelly Bean and has a budget price tag. A mini-HDMI port is included.
£119 inc VAT
my-go.co

Bowers & Wilkins Z2
Speaker dock
One of the first speaker docks to use Apple's Lightning connector is the Z2. Available in black or white, the speaker is compatible with iPhone and iPod and also has AirPlay built-in for wireless streaming from Macs and PCs. Two 3.5in glass-fibre drivers and a class-D amplifier provide the sound.
£329 inc VAT
bowers-wilkins.co.uk

Sony Xperia SP
Smartphone
If the Xperia Z is too big and expensive for your tastes then check out the Xperia SP. This smartphone has similar styling, but offers a smaller 4.6in (720p) screen. The Sony supports 4G LTE networks, and has an 8Mp rear camera with Sony's Exmor RS sensor.
Around £320 inc VAT (SIM-free)
sony.co.uk

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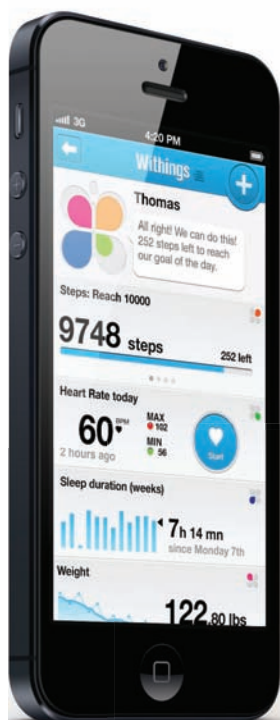
Withings
Activity Tracker
Health and fitness monitor

Withings' Activity Tracker keeps tabs on how many steps you've made and the calories you've burned, as well as measuring your heart rate and monitoring the quality of your sleep. The Activity Tracker is able to synchronise all this data with your smartphone or tablet.
Price TBC
withings.co.uk

Panasonic Lumix GF6
Compact-system camera

The Lumix GF6 is a compact-system camera from Panasonic that features a 16Mp Live MOS sensor that is said to capture high-resolution images with low noise. It has 19 filter effects and, thanks to Wi-Fi and NFC connectivity, can be used with tablets and smartphones for remote shooting and other functions.
£499 inc VAT
panasonic.co.uk

Sphero   >>
Robotic ball

Sphero is a remote-controlled ball that can be driven from a smartphone. Taking advantage of more than 20 associated apps, it can also be used as a games controller, for augmented reality and other functions such as djing.
£99 inc VAT
gosphero.com

G-Technology G-Drive
Pro with Thunderbolt
External hard drive

If you want a hard drive that does what it says on the tin, look to the G-Drive Pro with Thunderbolt. This stylish external hard drive is equipped with two Thunderbolt ports and transfers data at up to 480MBps. It's available in 2TB and 4TB capacities.
£554 inc VAT (2TB)
£674 inc VAT (4TB)
g-technology.com

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Amazon Kindle Fire HD 8.9 **36**

32

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Windows 7

TOSHIBA

38

ANDREW
HARRISON

Minis amok

Back in the 1980s the PC revolution spun around the microcomputer, as distinct from the mini computer and mainframes that filled rooms and crunched numbers for accommodating businesses and universities. We're still seeing an ongoing trend in shrinkage, which has resulted in the current mini PC – nothing to do with the old mini computer, and everything to do with a mini micro (see our group test on page 62).

The mini PC's growth in popularity and shrink in size track the trend for mobile computing, exploiting smaller laptop components that have enabled a downsize from 3ft tower to 3cm mini marvel.

The virtues are obvious. Rather than trip over a box under your feet, you get a diminutive and often times cute cuboid on the desk. It somehow makes the PC more personal when you can actually see it.

The cheaper models shave off substantial amounts from the purchase price by leaving out the operating system. This is a refreshing change from the usual situation of finding unbidden Microsoft software on your PC, now leaving us to make the choice of paying the Windows tax (currently £100 for Windows 8 and £190 for Windows 8 Pro) or trying a more economical or secure alternative.

Linux is the obvious go-to OS for such wee PCs, and for most desktop duties a simple installation of Ubuntu, OpenSuse, Linux Mint or similar is all that's needed for some powerful cut-price computing. Media-centre software is the other killer app to run on the OS of your choice – just follow the beaten path to XBMC or Plex. If you prefer a little more hand-holding, there's always Windows and its Media Center software, although you'll now need to budget for Windows 8 Pro on your £300 mini PC.

Sampling different Linux distributions is relatively easy with virtualisation software. Well-known examples are VirtualBox for just about every platform, Virtual PC and VMware Player for Windows, while the Mac has two strong contenders in Parallels Desktop and VMware Fusion. Great Windows support is now a given, but Linux and OS X are the harder challenge to fully virtualise. See how these two heavyweights measure up on page 46.

PC ADVISOR TEST CENTRE

Prices
All prices are RRPs quoted by the manufacturer or distributor and include VAT. Prices are intended as a guide and products are not guaranteed at our quoted price. PC Advisor's recommendations are for guidance only. The publisher takes no responsibility for purchasers' decisions.

DESKTOP TABLET

Sony Vaio Tap 20

Specification
1.7GHz Intel Core i5-3317U (2.6GHz with Turbo Boost); Windows 8 64bit; 6GB DDR3 RAM; 1TB HDD; 20in (1600x900, 92ppi) touchscreen; Intel HD Graphics 4000; 802.11a/b/g/n; gigabit ethernet; Bluetooth 4.0; 2x USB 3.0; SD slot; stereo speakers; 1.3Mp webcam with built-in mic; headphone and microphone sockets; lithium-ion battery; 312x504x45mm; 5.2kg

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

★★★★☆

Windows 8's touchscreen interface has given rise to a new breed of hybrid device that tries to function as both laptop and tablet. Sony has gone to the opposite extreme with its Vaio Tap 20, a giant 20in tablet that can also be used as a desktop.

The Tap 20 is, in effect, a 20in all-in-one PC. It's bundled with a rather lightweight keyboard and mouse, but you can operate it solely via the touchscreen if you wish.

It weighs a hefty 5.2kg, so there's no way you can pick it up with one hand and use it like a conventional tablet. But the Vaio is light enough to carry from room to room.

There's an adjustable stand that allows you to tilt the display at a comfortable viewing angle, or you can lay it flat and tap away at games or software, such as Sony's preinstalled finger-painting program.

The touch controls are smooth and responsive when navigating Windows 8's tiled Start screen. The width of the screen also means its onscreen keyboard is a useful size for quickly tapping in web addresses or the occasional email.

Using your fingers on the traditional Windows desktop for interacting with programs such as Microsoft Word and Excel doesn't work so well, which is where the keyboard and mouse can come in if necessary.

The screen is very bright and clear, with good viewing angles for watching video, browsing photos or web pages. But the 1600x900 resolution is disappointing – a screen of this size and price ought to have at least a full-HD (1920x1080) pixel-count for playback of HD video.

The speakers are modest, although they're adequate for listening to a spot of music in the kitchen while you knock up dinner. It's odd that there's no HDMI port that would allow you to connect the Vaio to a proper HDTV.

The Tap 20 is currently available in only one configuration in the UK. At £999 you get Windows 8, a dual-core Ivy Bridge Intel Core i5-3317U running at 1.7GHz, 6GB of memory and a 1TB hard disk.

We couldn't get PCMark 7 to run on the Tap 20, but our subjective assessment suggests performance is akin to that of a conventional laptop with a similar specification.

The Tap 20 should prove more than adequate for routine tasks such as web browsing and even running Microsoft Office. Its integrated Intel HD Graphics 4000 might just about pass muster for some casual gaming action, too.

We tried Batman: Arkham City at 1600x900 with High detail and recorded an unplayable 12fps. However, at 1280x720 and Low detail we saw a much better 30fps.

Battery life is very poor. We measured less than two hours (100 minutes) when streaming iPlayer video over Wi-Fi. However, a machine of this size is unlikely to spend much of its life away from the mains.

Verdict

The Sony Vaio Tap 20 could potentially work well as a family PC that is shared by several people and easily carried from room to room. After a few days of testing we got used to having it on hand for a quick spot of web browsing or firing up BBC iPlayer. It's pretty expensive for what is in effect just a tablet, but Sony is on a certain track with the Tap 20 – devices such as this could find a place in many homes once the price the price of this 20in tablet drops closer to that of a regular 10in model. ⊠ **Cliff Joseph**

LAPTOP

Dell Latitude E6230

Specification
2.6GHz Intel Core i5-3320M; Windows 7 Pro; 4GB RAM; 128GB SSD; 12.5in (1366x768) LCD; Intel HD 4000; 309x226x22.3-24.7mm; 1.28kg

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

★★★★☆

Dell has sold a range of business laptops under its Latitude label for well over a decade. The 12.5in E6230 is a compact, portable iteration of this evolving template – the smallest in the Latitude E family.

Our review model came with a custom configuration comprising an Intel Core i5-3320M processor running at 2.6GHz, 4GB of memory and a relatively small 128GB SSD.

Note that the SSD is an optional extra, and that Windows and other preinstalled software left less than 90GB free for storing documents and media. With today's software suites, media files and even web caching, you'll reasonably quickly fill that capacity.

The E6230 is a tough and robust machine. Following a streamlined design overhaul in 2011, the Latitude E series still impresses with its solid design and build.

Our review unit had a large 65Wh extended battery that projects from the rear of the case. This spoils the clean lines somewhat, but enhances portability, with improved runtime between charges. We were able to stream iPlayer video over Wi-Fi for 5 hours and 50 minutes. A 32Wh battery option is also available if weight or style is more important to you than substance.

A variety of materials are used throughout the construction. The display lid is predominantly aluminium, slim and stable, opening to an angle of around 130 degrees. The lid's remaining composition employs three types of plastic, with strong (if rather stiff) steel hinges.

The base unit composition is dense powder-coated plastic, with a fibreglass feel. The keyboard and trackpad are surrounded by spill- and slip-resistant rubber.

Despite the laptop's small chassis, Dell has fitted a full-size keyboard that's comfortable to use. The keys are curved and bevelled, with a good level of resistance. There's also a keyboard backlight, with four levels of brightness. It's a machine that's well designed for sustained periods of typing in portable conditions.

Specification
2.6GHz Intel i5-3230M (3.2GHz with Turbo Boost); Windows 7 Professional (Windows 8 Pro supplied on DVD); 4GB DDR3 RAM; 320GB hard drive; 13.3in (1366x768) matt LCD; Intel HD Graphics 4000; 802.11a/b/g/n; gigabit ethernet; Bluetooth 4.0; Toshiba Port Replicator dock connector; Intel WiDi; VGA; HDMI/DisplayPort; Intel WiDi; 1x USB 2.0/ eSATA; 2x USB 3.0; SDXC slot; ExpressCard slot; headphone socket; microphone socket; lithium-ion battery; 341x239x27.4mm; 2kg

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

★★★⯪☆

LAPTOP
Toshiba Tecra R940-1JG

At first glance, the rather non-descript matt-black design of Toshiba's Tecra R940-1JG looks identical to that of its Portégé R930. Both laptops are aimed at business users, and ship with Windows 7 preinstalled and Windows 8 on a DVD. However, a closer look reveals a number of important differences.

The Portégé is a lightweight 13.3in Ultrabook laptop that's very much designed for a life on the road. In contrast, the Tecra R940 is a much beefier piece of kit that is far more likely to live in the office, although it's not so heavy that you couldn't cart it about.

It's not immediately obvious, but the Tecra has a slightly larger 14in screen, packing 1366x768 pixels. Its non-gloss coating minimises glare and reflections, and provides a clear, sharp image for all applications.

The screen could be a little brighter, perhaps, but the viewing angles are wide enough that you could sit side-by-side with a colleague and both be easily able to see the screen.

The built-in speakers are a disappointment, producing a very thin and weak sound (turn to our group test on page 70 to find out how to improve your laptop's sound). But the Tecra is well connected, with a VGA port, combined HDMI/DisplayPort and Intel's

WiDi (wireless display) technology, which lets you connect a TV or monitor for presentation work.

The trackpad is a little fiddly, though, and a fingerprint scanner is squeezed in between the trackpad's two mouse buttons. This provides a fingerprint login option for business users, but it also reduces the size of the trackpad buttons.

Toshiba has also equipped the Tecra with an 'AccuPoint' pointer, which sits in the middle of the keyboard and is accompanied by an additional pair of buttons on the laptop's front edge.

The Tecra includes a DVD drive, which is partly responsible for pushing up the weight to 2kg.

The R940 does have more than enough power to act as a basic desktop-replacement machine. At £750, it's one of the cheapest models in the Tecra range, yet comes equipped with an Intel Core i5-3230M running at a healthy 2.6GHz (3.2GHz with Turbo Boost). There is also 4GB of memory and a 320GB hard drive.

That combination produced a score of 2,898 points in PCMark 7. It's an average score for a hard-disk-based laptop; an SSD drive would easily kick that figure closer to the

4,000-point mark. However, the Tecra feels fast and responsive, and it has got the necessary horsepower for running Microsoft Office or working on video presentations.

If you don't mind dropping the display to 1280x720 resolution and using Low graphics settings, you can even get demanding 3D games such as Batman: Arkham City running at a perfectly playable 30fps.

Battery life is good, and we recorded 5.5 hours when streaming video over Wi-Fi. The Tecra should hold its own out of the office.

Verdict
We've seen 14in laptops that weigh around 1.8kg, so the Tecra R940 isn't the most portable laptop in this category. However, it does provide some of the power and features you need from a desktop-replacement machine, while still offering usable battery life for those occasions when you need to leave the office.
⊠ **Cliff Joseph**

The touchpad is very small at 80x40mm, with separate left- and right-click buttons below. Some multitouch capabilities are supported, but disabled by default.

We benchmarked the E6230 running Windows 7 Professional in PCMark 7, and saw an impressive overall score of 4,437 points. The

Windows Experience Index of 5.0 is disappointing in comparison. It's not difficult to find the bottleneck: onboard Intel HD Graphics 4000. This option can't be upgraded.

The relatively poor graphics performance was confirmed in our Fear test, in which we recorded 21fps at Maximum detail.

For a business machine, video playback seems (subjectively) stronger than the specification would suggest. The LCD panel is limited to 1366x768 pixels, but this appears crisper on a 12.5in panel. The matt finish makes text easy to read under normal office lighting, and the backlit keyboard comes to your aid in the dark.

Connectivity is generous. There are slots for an SD card, a smart card and an ExpressCard, plus ethernet, eSATA, VGA and HDMI ports. You get one each of USB 2.0 and 3.0, while a docking port on the base mates with a Dell dock. Other options include a 3G data modem.

Verdict
With built-in mobile broadband and solid build quality, the Dell Latitude E6230 is a robust and road-worthy laptop. The inclusion of an SSD in our custom-built review sample helped optimise its performance, although we'd suggest stretching to a 256GB SSD if you can afford to do so. ⊠ **Karl Hodge**

LAPTOP
Chillblast Genesis Mini

Most gaming laptops are hulking great beasts with 15- or 17in screens, back-breaking weight, and a price well over the £1,000 mark. The Genesis Mini from Chillblast takes a completely different approach, aiming to provide good gaming performance in an affordable and highly portable 11.6in laptop.

The Genesis Mini is no Ultrabook. The unassuming black chassis doesn't include a DVD drive, but it still measures a chunky 37mm and weighs in at 1.8kg.

The 11.6in display packs 1366x768 pixels into a widescreen format. It's small, but bright and clear, with good viewing angles and a non-reflective coating. The Genesis Mini also includes HDMI and VGA ports, allowing you to hook it up to a larger screen or monitor.

Despite the laptop's size the keyboard is sufficiently large that our fingers could keep up during action-packed gaming sessions. Keys have plenty of travel, too. But at 85x42mm, we found the trackpad very small and fiddly. Gamers will almost certainly plug in a mouse, but the trackpad remains an annoyance for non-gaming use.

Chillblast provides several build-to-order options on its website. The basic Genesis Mini reviewed here costs £699 with your choice of Windows 7 or 8, a dual-core

Intel Core i5 processor running at 2.6GHz, 8GB of memory, and a 1TB hybrid Seagate Momentus XT HDD/SSD drive. That speedy hybrid drive helped the Genesis Mini to achieve a very solid score of 4,557 points in PCMark 7.

Gaming is the real test for the Genesis Mini, and the inclusion of both Intel integrated graphics and a separate nVidia GeForce GT 650M GPU ensures good performance at this price – even if it can't match the raw horsepower of most more expensive gaming laptops. Do note that you won't be able to upgrade this graphics chip.

Running Batman: Arkham City at the laptop's native screen resolution and High detail we recorded just 23fps, which is barely playable. When we dropped the graphics settings we saw 43fps.

Older games, such as Stalker: Call Of Pripyat zoomed along, hitting 86fps even with High detail.

We also connected the Genesis Mini to a TV to see how it would cope at full-HD (1920x1080) resolution. Batman ran at 15fps with High detail, and 34fps with Low detail. Stalker ran at a healthy 55fps even on the High setting.

You'll get only 90 minutes from the battery when playing games
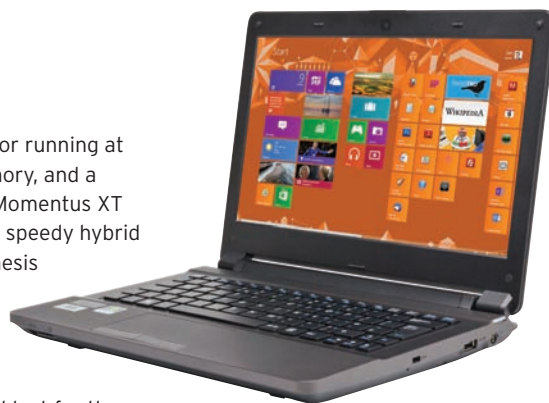
with the GeForce graphics, but you can switch to the Intel HD 4000 integrated graphics when completing less demanding tasks.

We recorded 4 hours 45 minutes when streaming iPlayer video over Wi-Fi, and you'll get longer still if you're using the laptop only for routine tasks such as web browsing.

The fan make a low hum during our games tests, but it was never loud enough to be obtrusive.

The speakers sound a bit tinny, but can produce decent volume.

Verdict
It's not the all-out guns-blazing gaming rig that Chillblast claims, but the Genesis Mini provides respectable gaming performance at £699. The 11.6in screen won't appeal to everyone, but it does make the Genesis Mini a good option for people who want a light, portable laptop that still provides enough power for some gaming action.
⊠ **Cliff Joseph**

SMARTPHONE/TABLET COMBO
Asus Padfone 2

The Padfone 2 isn't your typical smartphone: it comes with the dumb Padfone Station, a 10in tablet shell that's powered by the phone.

One advantage of using two devices with a single brain is that you have to log into your accounts only once, avoiding multiple notifications for the same alert.

You can use the phone as normal, but when you want a larger screen you simply dock the Padfone 2 into the Padfone Station's rear and it becomes a 3G tablet.

With the phone docked you can still send and receive calls and texts, and you need only pull it from its slot to disconnect it. The front looks like most other phones, but with

a larger 'chin' to house the touch buttons. We like the tapered shape, which has an iPhone-style metal band running around the edge.

The Padfone Station resembles a typical 10in iPad, but with a wider bezel. On the back is a huge hole for the phone, which is held in place by barbed rubber grips.

The build quality is a let down. The phone feels solid, but we don't like the textured plastic rear. The docking station has a smooth plastic finish, which doesn't feel very well built – it's too flexible, while the plastic cover is too easily unclipped.

Asus' specs mirror those of the Google Nexus 4. There's a 1.5GHz Qualcomm Snapdragon

S4 Pro quad-core processor and 2GB of memory. In Geekbench 2 the Padfone 2 scored a high 2,196 points, and its 43fps result in GLBenchmark is the best we've seen yet. Docked, this framerate dropped to 40fps.

JavaScript performance is less impressive, and in SunSpider we measured 1,865ms.

You get 32GB of storage, which is double that of most Google phones, but there's no expansion slot.

The phone has a bright 4.7in Super IPS+ display. Its 720x1280 pixel-count is below the new wave of full-HD phones, but it still offers a respectable density of 312ppi. The 10.1in tablet's IPS panel has a 1280x800 (150ppi) resolution.

COMPACT-SYSTEM CAMERA

Canon EOS M

Last to the compact-system-camera party, Canon has finally released its EOS M. We tested its efforts with a 22mm pancake lens (it will also accept Canon EF and EF-S lenses using a supplied adaptor), and were impressed with the excellent image quality captured by its 22.3x14.9mm CMOS sensor.

Our test images revealed crisp focus and pleasingly low noise levels throughout. Images display a considerable amount of detail and sharpness, even at high ISOs. Colour reproduction is also superb, with images vibrantly rendered.

Recorded video offers a similarly high level of quality. We saw no evidence of jerkiness, and the Canon maintained brilliant sharpness and good colours. The main issue we encountered was camera shake that was caused by adjusting the focus point on the 3in LCD touchscreen.

Unfortunately, ease of use is not the EOS M's strong point. In comparison to the intuitive nature of cameras such as Panasonic's K-01, Canon's first venture into this category takes some getting used to. Some functions are controlled by a few very simple physical buttons, while others are performed via complex menus on the touchscreen.

We found the camera would occasionally freeze, particularly when reviewing images. We also had some difficulty with the autofocus – at times it could be a little sluggish and frustrating.

The camera itself is tiny at 109x67x32mm and 298g without its lens. In most respects this is a good thing, but its compact chassis also creates new problems. When using large lenses the camera becomes awkward and front-heavy, somewhat precarious and difficult to hold, particularly without the assistance of a decent side grip. This is a common problem with the smaller compact-system cameras.

As is standard with mirrorless interchangeable-lens cameras, the EOS M has no optical viewfinder. Images are instead composed on the rear touchscreen. This features an anti-smudge coating, but it still benefits from a cloth wipe to free it from fingerprints.

Although there is a physical shutter-release button, you can also touch the screen to focus directly and take photos.

There's no built-in flash, but a hotshoe allows you to add one. All the various lens kit models are supplied with a Speedlite 90EX flash as standard.

Build quality is very good. The Canon is made from a matt black magnesium alloy, and doesn't feel plasticky or cheap. It's neat and quietly attractive, without being overly showy. That said, the plastic external flash isn't especially in keeping with its sleek design.

A three-point wheel sits on top of the camera, enabling you to switch between auto stills, creative stills and video mode. This wheel has a fair amount of resistance; while this is ensures that it isn't accidentally knocked, it can be difficult to turn with small or cold fingers.

Verdict

This good-looking camera has a lot going for it. The Canon EOS M will please if you're on the lookout for brilliant image and solid build quality. It has a sleek design and a small, lightweight body. A built-in flash would be useful to save fiddling with external adaptors, and we found the autofocus rather slow. A high price of £529 suggests it's a premium-quality camera, but the EOS M doesn't entirely live up to expectations. ⊠ **Becca Martin**

The Padfone 2 is packed with connectivity options, including dual-band Wi-Fi, Bluetooth 4.0, NFC, aGPS and support for 4G LTE.

Cameras total three: two on the phone and one on the tablet. The latter replaces the phone's front camera when it's docked.

The 13Mp rear camera performs well. We like its touch-to-focus feature, and our test photos using auto settings looked good. Noise is an issue in low light, however.

Full-HD (1080p) video can be recorded at 30fps, but the default is 720p, 60fps. The front cameras are standard: 1.2Mp and 1Mp for the phone and tablet respectively.

The Padfone 2 runs Android 4.1.1 Jelly Bean with an update to 4.2 available for SIM-unlocked models. Minor Asus customisations include quick access buttons for Wi-Fi, GPS, Bluetooth and screen settings in the notifications bar. The lock screen is basic, and doesn't allow access to the notification bar.

Preloaded apps include Amazon Kindle, Polaris Office 4.0 and Zinio, as well as Asus' own Asus Studio, AudioWizard, BuddyBuzz and Webstorage. We're not keen on the Asus keyboard's tiny Space key, but it does have a nice freehand mode.

Asus says the two batteries combined offer 36 hours of talk time. We got three days' use from the combo when taking advantage of the battery-saving mode.

Verdict

A phone and tablet in one, but with some limitations. A fast processor and excellent battery life are the standout features, but plastic build quality lets it down. ⊠ **Chris Martin**

LAPTOP
Samsung Series 5

Specification

2.1GHz AMD A6-4455M; Windows 8 64bit; 6GB DDR3 RAM; 500GB HDD; 13.3in (1366x768, 118ppi) LCD; AMD Radeon HD 7500G; 802.11a/b/g/n; gigabit ethernet; Bluetooth 4.0; 1x USB 3.0; 2x USB 2.0; SD slot; stereo speakers; 1.3Mp webcam with built-in mic; combined headphone/microphone socket; lithium-Ion battery; 314x218x18mm; 1.4kg

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

★★★☆☆

Samsung's Series 5 isn't the most original-looking laptop range. We found the smooth curves and metal-effect finish of the 13.3in model strongly reminiscent of the Apple MacBook Air.

The packaging has the word 'ultra' plastered all over it: it's ultra-light, ultra-slim; the only thing missing is the term 'Ultrabook'. That's because this Samsung runs an AMD rather than Intel processor.

The Series 5 is certainly an ultraportable, though, just 18mm thick and 1.4kg in weight. The case is made from plastic, but it feels sturdy enough to cope with the odd bump. Overall build quality is good, given that the Series 5 costs around half the price of the 13in MacBook Air.

The screen is bright and, thankfully, non-gloss to minimise glare. The 1366x768-pixel resolution is lower than that of the Air, but it's fine for casual video or photo viewing. Brightness drops off quickly as you move your position relative to the screen, with the Samsung offering poor viewing angles. We'd recommend hooking it up to a TV or monitor via HDMI or Mini DisplayPort to avoid these issues.

The speakers sound tinny, and the laptop lacks an optical drive. But the keyboard and trackpad feel firm and comfortable in use.

The Samsung runs Windows 8 on a 2.1GHz AMD A6-4455M dual-core processor. You also get 6GB of memory and a 500GB hard disk. AMD's integrated Radeon HD 7500G chip handles the graphics.

The Series 5 is no speed demon, and we recorded just 1,445 points in PCMark 7. This low score is partly due to a slow hard disk dragging down the overall performance score. The laptop should be easily adequate for routine tasks such as web browsing and word processing.

It's no gaming machine either, and the Radeon GPU could barely manage 9fps in Batman: Arkham City at its native screen resolution. Dropping to 1280x720 and the lowest quality settings resulted in a still unacceptable 20fps, making the Series 5 good for nothing more than Farmville in gaming terms.
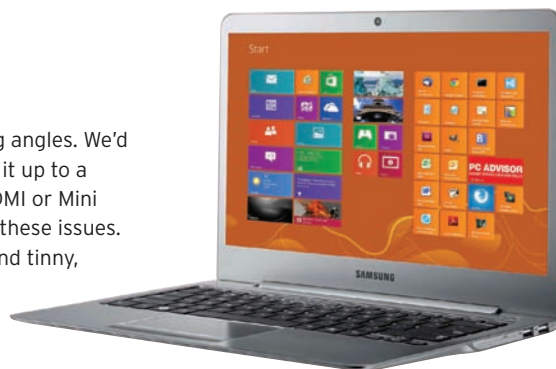
Neither is battery life what we'd consider to be 'ultra'. We measured just three hours when streaming iPlayer video over Wi-Fi. Depending on your usage, you may stretch another hour from the laptop.

Verdict

Producing an ultraportable below £500 will inevitably involve some compromises. The Series 5 handles routine computing tasks well, and it's light and sturdy enough for portable use. ⊠ **Cliff Joseph**

TABLET
Amazon Kindle Fire HD 8.9

Specification

1.5GHz TI OMAP 4470 dual-core CPU; Android 4.0.4; 770MB RAM; 16GB/32GB storage; 8.9in (1920x1080) IPS touchscreen; Imagination Technologies PowerVR SGX544 GPU; 2.4GHz/5GHz dual-band 802.11b/g/n; 1.3Mp front camera; micro HDMI; Micro-USB 2.0; 39x163x9mm; 567g

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

★★★★☆

Amazon's Kindle Fire HD 8.9 tablet is now available in the UK, with a near-identical design and specification to its 7in brother.

As with previous Kindle Fires, it runs a custom OS based on Android 4.0. It's slick and easy to use, but locked down. Amazon's slate was designed to encourage consumers to buy its apps, games and digital books and magazines.

At your own risk it can be hacked to run third-party apps. Amazon's own app store is limited.

A monthly subscription lets you stream HD films from Lovefilm Instant, but there's no option to download for offline viewing.

Reading e-books on the big screen is a pleasure – but, if you're moving from a traditional Kindle, you'll notice the extra weight.

Designed for operation in landscape mode, a webcam sits above the display. Your hands can easily muffle the two speakers.

On the bottom are Micro-USB and -HDMI for synching, charging and hookup to a TV. The volume and power buttons lie flush to the case, and are difficult for the fingers to find without looking.

The build quality is impressive, but this 567g tablet is heavy – and heavier still with its case. Thick black borders around the screen make it appear to be oversized.

A highlight is the full-HD screen with 254ppi density. This sharp IPS panel offers wide viewing angles, deep colours and good contrast.

There's Wi-Fi and Bluetooth, but no GPS or NFC. Whereas the Fire HD 8.9 has a faster dual-core processor than Amazon's 7in version, it doesn't feel as zippy as a Nexus 7.

In our benchmarks, the new Fire hit 1,398 points in Geekbench 2, 12fps in Egypt HD, and 1,376ms for Sunspider JavaScript, putting it on par with the Nexus 7. Although the browser loaded pages quickly, it suffered annoying delays when scrolling and loading pictures.

We recorded 7 hours 15 mins of video playback at full brightness.

No mains charger is supplied, and the Fire HD took a foot-tapping 14-plus hours to charge over USB.

Verdict

The Fire HD 8.9 is a good-value tablet for those happy to live in Amazon's world. Performance and the screen are great for the money. ⊠ **Jim Martin**

Specification
1.6GHz ARM Cortex-A9, dual-core; Android 4.1; 1GB RAM; 8/16GB storage; 8in (1024x768, 163ppi) IPS touchscreen; Mali 400 MP4 quad-core GPU; 802.11b/g/n; 2Mp, 0.3Mp cameras; 3.5mm jack; Micro-USB; mini-HDMI; microSDXC slot; 16.3Wh, non-removable battery; 200x154x10.2mm; 430g

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

★★★★☆

TABLET
Archos 80 Titanium

The Archos 80 Titanium is an 8in tablet that, save for its low price and Android-based OS, is in many ways a clone of the iPad mini.

It has the same wide bezel and bevelled edges, even the same 8in in-plane switching (IPS) screen with 1024x768 pixels and a 4:3 aspect ratio. As with the iPad mini, viewing angles are wide in all directions, and colours are realistic. Only an off-centre front camera and the Archos logo give away its true identity.

The 80 Titanium is heavier than the iPad mini, but it feels lightweight and well built. It doesn't rattle or twist, thanks to the familiar aluminium rear shell. Around the edges you'll find a volume rocker, home button, headphone jack, Micro-USB, mini HDMI, separate charging jack and microSDXC card slot – handy, since storage is limited to 8- or 16GB. Note that the Archos won't charge via USB.

There's built-in Wi-Fi, but no Bluetooth, GPS or cellular connectivity. You get front and rear cameras, but both offer poor-quality photos. Video is dismal, both low resolution and jerky.

In most of our lab tests the Archos 80 Titanium bested the Amazon Kindle Fire HD, Google Nexus 7 and even the iPad mini with its 1,472-point score in Geekbench. The iPad mini offers far superior graphics, though, and we recorded 24fps against the Archos' 15fps. In general use, we were impressed with the Titanium's speed.

The Archos runs standard Android 4.1 Jelly Bean, to which it adds its own video and music apps. We preferred these to Google's counterparts, although there are many such apps to choose from in Google Play. The video player has shortcuts to screen brightness, rotation lock and bookmarks, and lets you loop videos.

Battery life is poor. Whereas the Apple and Google mini tablets lasted between 7- and 9 hours in our video-looping test, the Archos mustered only half that. Some users have also reported problems with the Wi-Fi.

Verdict
If you're after a cheap Android tablet with decent screen, the Archos 80 Titanium is a bargain. It's a shame it can't be charged over USB, given the short battery life. The processor performance and build quality are impressive for the price. ⊠ Jim Martin

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Specification
Colour multifunction inkjet printer; 5760x1440 print resolution; 1200x2400 scan resolution; 32ppm specified speed; 120-sheet standard input capacity; 802.11b/g/n; USB 2.0; 390x341x138mm; 7.1kg

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

★★★★☆

PRINTER
Epson Expression Premium XP-605

The Epson Expression Premium XP-605 is intended to appeal to the home user who wants a compact multifunction printer that majors on photo prints, but can also turn out good-quality text documents at a reasonable rate.

Its glossy white slimline appearance is attractive. The printer stands just 138mm tall, thanks to wafer-thin input trays. These hold 100 standard- and 20 photo sheets. While these smoothly slide into place, given the confined space their removal can be awkward.

Epson has made clever use of the pull-out output tray, and a CD/DVD printer stored in the bottom of the unit snugly slots into the top of the tray when needed. The output tray must be manually extended before the XP-605 will print, though.

Most functions centre on the touch-sensitive control panel, which is dominated by a 2.5in colour LCD. Navigation is exceptionally easy, and the entire panel can be tilted by 90 degrees to aid viewing.

Connectivity options include USB and Wi-Fi, but there's no ethernet.

A mobile app allows effortless printing from tablets and smartphones, and you can also directly print data from a USB stick, camera or SD card. Setting up the scanner isn't as straightforward, however. The Epson's scanning component failed to find a wirelessly connected laptop, causing us to resort to USB.

Epson's Claria Premium inks (five cartridges, including two black) put in a good showing in our tests. We saw impressive sharpness and detail in colour photos, and solid blacks in text documents. Colour graphics printed on standard paper avoid the overly dark tones often produced by more expensive multifunction printers, too.

We measured text-only print speeds of 4 pages per minute (ppm) in the default duplex mode, and 11ppm in standard mode. We found 4x6in photos averaged 22 secs to complete, while A4 prints required 1 min 5 secs. Note that these results do not include the startup time.

The use of standard cartridges results in running costs of 4.5p per mono page and 9p for colour. With high-yield tanks these prices are reduced to 3p and 6p respectively.

Verdict
This stylish and well-featured multifunction printer from Epson produces high-quality photos and duplex documents, but you'll pay a premium for the ink cartridges. ⊠ Martyn Clayden

PC ADVISOR
GOLD

iPHONE ACCESSORY

Powerskin iPhone 5 Battery Case

The Powerskin is a soft gripping silicone case for the iPhone, with an integral 5.6Wh lithium battery. While the iPhone offers excellent battery life, if you run social apps in the background, use GPS, Wi-Fi or often find yourself with a poor signal, you may benefit from a secondary reserve of battery power.

The case covers the phone's buttons, but it's easy to find them through the soft rubber. The headphone jack is recessed, so Powerskin bundles a 3in extension cable for use with thick or angled plugs.

The case charges via Micro-USB only after the iPhone's own battery is full. When the iPhone's battery becomes low you can simply press the charge button for a few seconds to boost its power reserve. Four indicator lights display how much juice remains.

The Powerskin has USB-spec 5V/1A input and output, and will charge the battery up to 80 percent in one hour, then trickle-charge the remaining 20 percent over another hour. This preserves the life of the battery.

We're big fans of the Mophie Juice Pack Helium, but we preferred the softer rubber of this Powerskin. It made removing the iPhone for synching purposes easier. It also feels as though it will survive a short drop better than the hard-case Mophie.

Verdict
We like the Powerskin's soft but hardy silicone case. It's simple to flip in and out an iPhone 5, which you'll need to do to sync by Lightning. It's not the cheapest, but the Powerskin may be the answer to a power-hungry iPhone user's prayer. ⊠ **Simon Jary**

£69 inc VAT ■ power-skin.com ■ tinyurl.com/d46r5f9

Specification
External battery and case for Apple iPhone 5; Lightning port plug; 5.6Wh lithium battery; 82g

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

★★★★☆
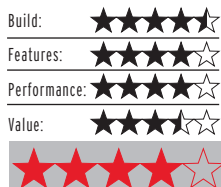
USB-LIGHTNING CABLE

Scosche strikeLine Pro

Scosche's strikeLine Pro takes on an important role for anyone who has owned an iPod or iPhone in the past 10 years and now upgraded to an iPhone 5, iPad 4 or iPad mini.

When Apple changed the dock connector on its ubiquitous sync'n'charge cable, it orphaned millions of USB leads. Now you need a Lightning cable to serve this purpose.

The strikeLine Pro is a USB-to-Lightning cable that's particularly welcome, given its ability to ravel itself up for stowing away.

Unlike similarly spring-loaded USB and headphone cables we've seen, this is a high-quality iAccessory. The wire itself is relatively chunky and flat-sectioned, which helps it to neatly coil inside the reel.

The action feels good, and is a world apart from some Christmas-cracker wind-up cables made in the same spring-action style.

Fully retracted the cable runs just 115mm from plug to plug. At full length this model stretches to more than a metre.

As an Apple-licensed Lightning cable, the strikeLine Pro worked well in its primary task of charging our iPhone 5, and let us zip across music files.

Just make sure you follow the cable's only instruction: 'pull from each end to extend. Do not pull from one side!'

Verdict
Simple, but effective, the strikeLine Pro serves as a good example of a third-party Lightning cable, and one that will reel itself into a pocketable drum on demand. It's £5 more expensive than Apple's, but involves no picking apart tangles. ⊠ **Andrew Harrison**

£20 inc VAT ■ scosche.com ■ tinyurl.com/cmxr2oo

Specification
USB Type A to Apple Lightning; USB 2.0; spring-loaded cable coiling mechanism; 104.5cm max length; 115x38x16mm; 32g

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

★★★★☆

LAPTOP STAND

Rain Design mStand 360

If you use your laptop in a desktop fashion, with it providing the second screen in an external keyboard, mouse and monitor setup, it's wise to perch it higher to avoid strain. This Rain Design mStand can also proffer the laptop's own keyboard and trackpad by tilting the notebook gently toward you.

In the case of recent MacBooks with generous multitouch trackpads, this setup also encourages you to continue using OS X touch gestures for navigation.

The mStand is a solid aluminium stand, with its U-shape inspired by the foot of the Apple Cinema Display and recent iMacs. It's a solid frame of folded metal, a uniform 4mm thick and weighing 1.39kg. (The iMac's foot is thicker, but it holds a greater mass.)

An upturned lip at the front and four small rubber pads on the top surface prevent slippage. The latter hinder any heatsinking potential by preventing metal contact, but the tilt could aid convection cooling.

A new feature in this model is the swivel stand. This is a Lazy Susan affair, with a round plate on the bottom and eight steel balls serving as a stable bearing. There's no apparent wobble, and the laptop can be easily rotated on demand.

The build quality is first class, save for some wrinkling in the metalwork at the rear.

Verdict
The Rain Design mStand 360 is simple, superbly executed, and potentially invaluable to anyone who regularly uses their laptop with outboard peripherals on the desk. ⊠ **Andrew Harrison**

£60 ■ raindesigninc.com ■ tinyurl.com/d5jaumc

Specification
Aluminium laptop stand; 360-degree swivel; 78-155x220-242x186mm; 1.39kg

Build:	★★★★☆
Features:	★★★★⯪
Value:	★★★⯪☆

★★★★⯪

Specification
Wireless keyboard and mouse set; 104-key membrane switch keyboard; 10 million key operations; infrared optical mouse; scroll wheel with key function; 1000/2000ppi adjustable resolution; 2x AAA batteries each unit; 441x165x18mm (keyboard), 107x60x27mm (mouse); 722g (keyboard), 127g (mouse)

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

★★★★☆

KEYBOARD & MOUSE

Cherry DW 8000 Wireless Keyboard and Mouse

The DW 8000 is a wireless keyboard and mouse from German specialist Cherry. This pair of Cherries is Apple-flavoured, though, coloured silver, with white plastic Scrabble-tile keys and a white underbelly to the mouse. Both units are lightweight plastic, but look stylish and are reasonably inexpensive.

Both have battery status displays, and via a USB dongle will wirelessly connect to your PC over the 2.4GHz radio.

The keyboard measures 441x165x18mm and sits flat on the desk. It's stable, but if you're used to typing at an angle you'll find your fingers aching for the familiar tilt.

The shiny plastic helps repel dust and grot. Sizeable gaps between the keys means that even a serial desk-sandwich jockey need only tilt the keyboard over the bin to shake out crumbs.

The keys are a decent size and, although they're thin and don't travel far, they give a satisfying click

when hit. The layout is IBM/Windows only.

We also liked the mouse, although fans of rodent tech will miss additional buttons and touch capabilities. It's a good size and shape, and its curvaceous sweep should fit hands of all sizes. The mouse is resolutely old-school, though, with two buttons and a ratcheted scrollwheel.

Button clicking feels solid and receptive, and the scrollwheel, while defiantly mechanical, is accurate and provides useful feedback. In general, it's accurate, and the resolution can be reduced from 2000- to 1000dpi.

A colleague who recently used our Windows 8 PC complained that the Cherry "doesn't work properly with Windows 8". We'd contend that a traditional three-button mouse can work with Windows 8. And when it doesn't, it's the fault of the OS and not the mouse.

The Cherry DW 8000 bundle costs around £65, putting it in premium territory. It'll make your workstation look more stylish, but it offers little in the way of additional time-saving functionality.

Verdict
Stylish and relatively affordable, we like this mouse and keyboard from Cherry. Build quality is plasticky and not as good as you'd expect from a distance, but the DW 8000 is well constructed, reasonably robust and lightweight. Both keyboard and mouse are comfortable to use and have useful features. ⊠ **Matt Egan**

PRODUCTIVITY APP

Google Keep

Free

Contact
- drive.google.com/keep

Read more
- tinyurl.com/butwcne

System requirements
Android 4.0.3 or later;
1.5MB storage

★★★☆☆

Google is taking on the perennial digital note-taking favourite Evernote with Google Keep, a service that lets you store quick notes, checklists, web links and photos for things you need to remember or keep track of.

Even though Google is offering a way to get at your notes from your PC or laptop, don't be fooled into thinking this app was designed for both desktop and mobile devices. The current version of Keep is all about creating notes on your Android smartphone or tablet, then accessing them from anywhere. You can certainly create new notes using Keep on the desktop, but the web version has some limitations.

Into the Keep

Google is billing Keep as a digital replacement for the swarm of sticky notes strewn across your desk, monitor and refrigerator. You'll be able to access your notes and reminders from anywhere you have internet access, since all your notes are synched with Google Drive.

Creating a note in Keep is straightforward. At the top of the screen are icon options to create a text note, checklist or audio note, or snap a photo. One handy feature transcribes audio notes into text, with the original recording embedded in the body of the note. Photo notes can include text if you wish. You can also add a quick text note by tapping the 'Add quick note' area above the menu icons. Homescreen widgets makes the process even faster.

Each note you create is searchable and displayed below the menu bar using the card metaphor Google utilises for Android services

such as Google Now. Your notes are by default displayed in a grid view, but a single column view is available. Tapping on a note opens it in full-screen view, and swiping a note to the left or right archives it.
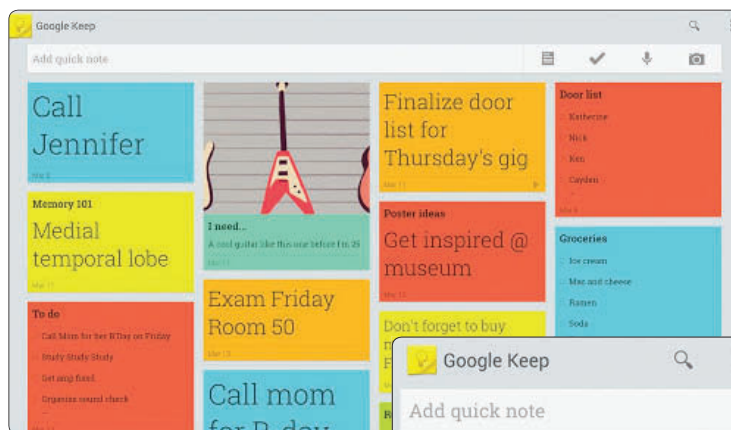
Notes can be colour-coded, too, which can help you separate your to-do lists from general reminders, or enable you to identify photo notes at a glance. Changing the colour of your note when using the 'Add quick note' option will permanently change the default from white to the new colour.

Sharing your Keep

Android users can share notes by selecting the Share icon that appears in full-screen view. Keep's sharing function is standard Android fare, allowing you to share notes using the apps installed on your device. Gmail is especially useful.

Checklists are shared as plain text, using brackets to stand in for check boxes, and photos are sent as standard attachments.

You can also add notes from other apps using Android's share options. You could, for example, grab a web page from Chrome. In this scenario Keep is designed to create a website preview, but it doesn't do a great job of that right now. The app is supposed to display the page's headline and URL, and there is a large space for an image from the page. However, Keep failed to display an image for any of our saved pages from multiple sites.

Keep on the desktop

Keep may be a little rough around the edges on Android, but it's still far more refined than the web interface. For starters, even though Keep saves your notes in Drive, the service is not yet integrated into the Drive menu, meaning there are
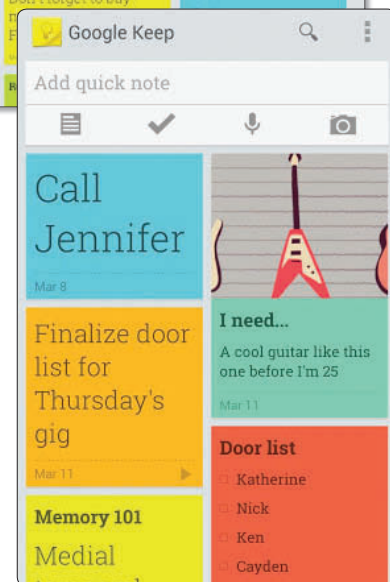
no quick links to get to Keep from Drive. Instead, you have to manually enter the URL.

Similar to the Android app, the web version lets you view your notes in a grid or single-column view. You can also type in new text notes, create checklists, upload images, and search, delete, archive and view archived notes. Beyond the basics, however, there are a few obvious features that are lacking.

If you grab a URL from a news story on your PC, Keep doesn't create a preview of the page and saves the URL as plain text – it can't even create a link. You can upload images from the desktop, but there's no option to use your webcam to take an image, which is a handy feature of Evernote. It's a shame Google didn't work a little HTML5 magic to include this option.

Verdict

Anyone who uses Google Drive to store all their content and isn't yet using an application for keeping miscellaneous notes may be very happy – or at least content – with Keep. If you are a dedicated note-taker, however, Keep's flaws will send you scuttling back to Evernote in short order. ⊠ Ian Paul

SEARCH APP
CloudMagic for Windows 8

Free

Contact
■ cloudmagic.com

Read more
■ tinyurl.com/ckL3xkb

System requirements
Windows 8; 1.1MB storage

Search service CloudMagic, which made its debut in 2010, is now available as a native application for Windows 8's Modern UI. This edition still delivers super-speedy, accurate search results across a host of services, but it's a bit hamstrung by some of Windows 8's own problems.

CloudMagic is an all-in-one search engine that supports several popular social-media, cloud storage and webmail services. You simply grant CloudMagic access to the accounts you'd like it to search, and it goes to work indexing them.

While the basics are the same, the experience of using CloudMagic as a Windows 8 app is very different to using it in your browser. Whereas the browser extension displays results on the web page you're viewing, the app is standalone.

CloudMagic neatly organises results by type. You can see messages, people, files and docs, posts and updates, and events. Filters mean you can easily search a specific category.
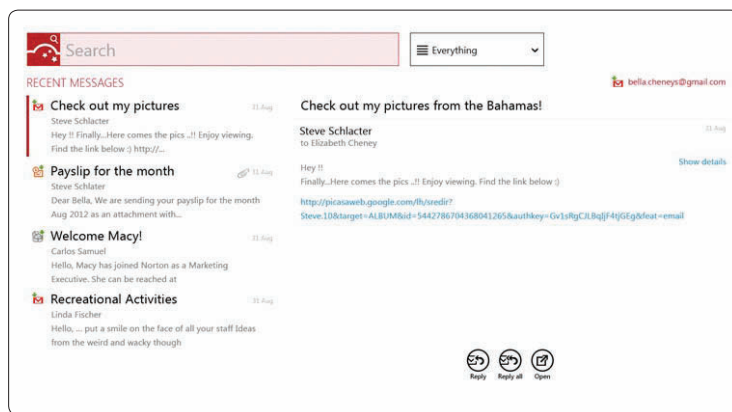
CloudMagic's results appear in real time as you type, and proved to be very accurate in our tests. Its Modern UI design displays results in large text in a column on the left side of the screen. Clicking on one of the results brings up a preview on the right side of the screen. Depending on what type of content this preview contains, you'll also see certain options underneath. If it's an email message, for example, you'll see options for 'Reply' and 'Open'.

Unfortunately, much of the content that CloudMagic searches comes from services such as Gmail and Facebook that don't have dedicated Windows 8 apps. When you open these you're taken to your browser and returned to the desktop interface.

The app is free, but you're limited in what you can do. Each month you get 50 free 'previews' (clicking on a result); if you require more, a Pro account costs $5 per month.

Verdict
CloudMagic's Windows 8 edition delivers super-speedy, accurate search results across a host of services. However, it's hampered by a lack of apps for associated services. ⊠ **Liane Cassavoy**

GAME
Sonic Dash

Free

Contact
■ sega.com

Read more
■ tinyurl.com/cckxz5k

System requirements
iOS 5.0 or later;
42.9MB storage

The good thing about Sega no longer making its own hardware is that Sonic The Hedgehog, that spiky blue icon of 90s pop culture, is free to try new things on new platforms. However, this also means Sonic can turn up in anything, anywhere, regardless of how tawdry it is.

Conceptually, Sonic Dash makes a lot of sense. Speedy Sonic is a natural fit for running games such as Dash. Here, he sprints through familiar environments, dodging familiar enemies and picking up familiar bonus items.

In essence, Dash is a decent translation of Sonic from his platforming roots to the current fad genre, and the game has console-quality graphics, too.

The swiping and tapping necessary to stop Sonic colliding with spiny robot crabs or hitting an electric boulder at 90mph is reassuringly involved, with everything happening with enough velocity and flash that Dash doesn't come off as a dumbed-down spin-off.

But the game also slavishly adheres to the other fad of the hour: in-app payments. Sonic's barely put a red-and-white boot on the ground before the game's prompting you to spend real money on the rings and stars needed to buy boosts and upgrades.

As Sonic is more traditionally associated with challenges of player skill and reflex, having something that's so overtly concerned with paying to shortcut your way to success does grate. Unfortunately, our beloved hedgehog is chasing the smell of money rather than triumph.

The game itself is free, of course, and you don't have to buy these items to progress.

Verdict
In Sonic Dash there are strong hints of that rarest of things: a decent 21st-century Sonic the Hedgehog game. Sadly, it's so preoccupied with wringing money out of its players that Sonic Dash undoes its own good work. ⊠ **Alec Meer**

BACKUP SOFTWARE

Paragon Backup & Recovery 12 Home

£30 inc VAT

Contact
■ paragon-software.com
Read more
■ tinyurl.com/cneawtn

System requirements
Windows 2000/XP/
Vista/7; 256MB RAM;
250MB drive space

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

★★★☆☆

PARAGON aims to back up all your data before your hard-disk drive fails

It's one of the outstanding truisms of computing that backup seems an unnecessary faff – until your hard disk crashes and you lose precious data. Paragon Backup & Recovery 12 Home aims to make it less of a chore, covering both file and sector backup and restore.

Sector backup copies to another drive a working partition in a self-contained file. This can be used to restore a PC should its hard drive fail. The copy can be placed on a local drive – other than the one you're backing up, of course – an external drive or memory stick, a network drive or an FTP server.

File backup is for data files, such as documents, audio tracks, photos and videos.

Paragon offers two modes of setting up and controlling backups: Express and Advanced views. Things are unnecessarily confusing, though, because there are so many ways of getting at everything. For example, the Smart Backup Wizard is available from the Express menu and from the menu bar, button bar and side panel in Advanced mode.

Setting up a backup job with the Wizard takes eight separate screens, but even then it's only a 'virtual job' and needs to be specifically run and confirmed – two more steps.

This may be a useful approach for Paragon's partition-management software, with which your precious data could be accidentally destroyed, but backup is usually a non-destructive process, and doesn't need this level of protection.

Creating a sector backup of our 50GB basket of assorted test files took 26 minutes. This is an identical result to that of Paragon's main rival, Acronis True Image 2013.

Backing up the same data as files took 1 hour 35 minutes, and the program refused to let us minimise it while the job ran. There's a simple scheduler, but this doesn't include any control of the space or number of backups. True Image lets you roll the archives, deleting the old as new ones are created, so you don't fill your archive disk.

Paragon offers a wide range of backup variations, including incremental, differential, and incremental backup to a sector image. The latter allows you to add to a sector-based backup only the files you've created since the previous backup, which is quicker and saves space.

Although the program can back up to an FTP server, there's no specific support for services such as Dropbox, and no online storage option from Paragon.

Verdict

Paragon Backup & Recovery lacks much of the sophistication of Acronis True Image. It handles both sector- and file-based copies, and can back up to a variety of media, though it has no dedicated online storage. The interface isn't ideally suited to backup and restore. As a single-PC application, £30 isn't especially cheap. ⊠ **Simon Williams**

MEDIA SUITE

Nero 12.5 Platinum

£70 inc VAT

Contact
■ nero.com
Read more
■ tinyurl.com/btptLm6

System requirements
2GHz processor; Windows
XP/Vista/7/8; 1GB RAM;
5GB drive space

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

★★★★☆

Nero Burning ROM began life as a simple CD- and DVD-burning program, but expanded as formats multiplied and uses grew. The suite now comprises six modules: Burning ROM, Video, Kwik Media, Recode, BackItUp and Rescue Agent. There's a front end called Nero Express, too.

Burning ROM is the main disc-burning tool and handles CDs, DVDs and Blu-ray discs in just about all their forms. New features in version 12.5 include DiscSpan, SmartFit and SecureDisc. DiscSpan enables data to be spanned across discs; SmartFit shuffles around multi-file data to fit between disks, getting the most data into the smallest storage space.

You might expect Nero to help you decide what combination of discs would be best before you begin, but it's up to you to feed in discs until the program says stop. This is messy. We tried to burn 9.6GB of data, expecting to fit it on two 4.7GB DVDs and a 700MB CD, which should total 10.1GB. We needed a second CD to copy the last 200MB. The burn took 18 minutes 40 seconds, excluding the time it took to change the discs, writing to CD at 48- and DVD at 16-speed.

SecurDisc attempts to guard against scratches and other damage that can make a disc unusable. It does this by creating multiple copies of the data, which reduces the storage capacity of the disc. You can select the level of redundancy to balance space against security.

Nero Video is a very reasonable video editor. It might not have the sophistication of Adobe Premiere Elements or Pinnacle Studio, but it can handle the basics. Import and editing of files up to 1080p/60fps is matched to a multitrack timeline, into which video, stills, audio and a range of transitions and effects can be dragged.

New features include an antishake template, which is a basic stabiliser for home videos taken handheld – that is, most of them.

Nero Recode is an easy-to-use video converter. You drag the file for

MOVIE ORGANISER

My Movies

Free

Contact
■ mymovies.dk

Read more
■ tinyurl.com/c2bkzLr

System requirements
Windows 7 Home Premium/Professional/Ultimate/8 Pro/Mac OS X 10.6 or later

PC ADVISOR
RECOMMENDED

Usability: ★★★★☆
Features: ★★★★½

★★★★½

MY MOVIES keeps tabs on your entire DVD and Blu-ray movie collection

Many of us will have built up a large collection of DVDs and Blu-ray discs. Keeping a precise inventory has its advantages, and that's where the free and very capable My Movies for Windows can be useful.

If you have a small collection, seeing what movies you own is easy enough. But with a huge collection of hundreds or thousands of discs, it's easy to lose track of what's what. You may even accidently accumulate duplicate discs.

A disaster such as burglary, fire or flood can write off your collection, although it's potentially replaceable through insurance if you have an up-to-date inventory. And if you're in the habit of loaning disks to friends and colleagues, it's easy to lose track of who has what.

My Movies runs on multiple platforms and allows you to input the details of each DVD and Blu-ray you own. Submitting a title can be achieved in various ways. There's manual input; holding the barcode up to a webcam on your PC; and, our favourite, inserting the disc into your PC and watching as the software uses an online database to enter all the film details for you.

Once you insert the title, My Movies will upload all the relevant information, including the cover (you can change the cover if it selects the wrong one), plot, actors, production crew and information about the disc itself. You can also specify whether or not you are keeping, selling or trading the disc. You can even create your own wishlist to share online with friends and family.

When the desktop software has listed all your discs, you can upload everything to free webspace on the My Movies server. The speed at which this is uploaded will depend on how much you are sending over, but we found it a quick process.

What is stunning about My Movies is the breadth of systems on which this database software will run. There is a Windows Media Center plug-in for Windows 7, which lets you play the film, browse the cast and play trailers using a remote control.

There's also a standalone version for Windows XP to 8, called My Movies 4 Collection Management. For Windows Home Server 2011, there's My Movies Home and Essentials, while Mac users are served by two versions. My Movies Free is more of a trial version, since it catalogues only 50 films, but the Pro version (£7) unlocks this limitation. And for mobile devices there are versions for iPhone and iPad, plus Android.

Verdict

My Movies is easy-to-use desktop software that syncs with the My Movies website to fill in all the details of your film collection. This is fantastic software for anyone who is serious about cataloguing their media collection, able to fill in a wealth of detail about the films you own on disc, or even those you wish you owned. ⊠ **IDG staff**
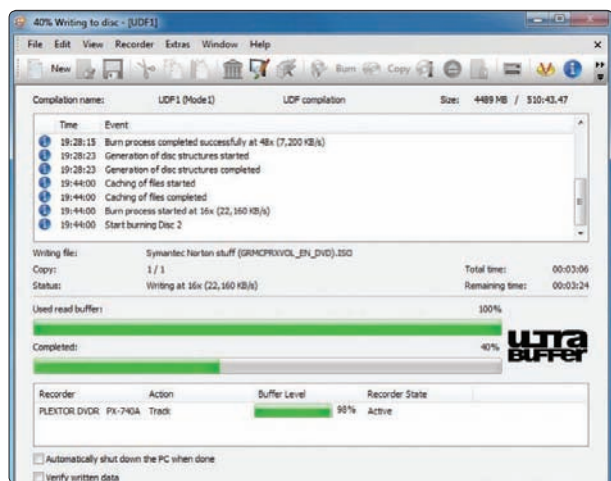
NERO is no longer just a simple CD- and DVD-burning application

conversion into the program, select the output type and wait. The recoder has itself been recoded, so it's quicker than before. It won't handle copy-protected discs, though.

Nero BackItUp is as simple or complex as you want it. At the most basic level, just flicking a virtual switch in Nero LiveBackup is all you have to do to automatically back up a Windows PC using the default settings.

The source and destination drives can be reconfigured; if this isn't enough, BackItUp also includes separate file and system backup apps.

The integration between individual modules isn't good, however. Each program has its own interface and, while some, such as Burning ROM, are well-established and what they do is relatively logical, there's little consistency between the various interfaces, even down to the styling of the buttons.

Verdict

You get a considerable suite of software in Nero 12.5 Platinum, but you need to consider which elements are most important to you. Nero Burning ROM is still one of the best media burners available, and Nero Video is a good entry-level video editor, although it lacks the sophistication of the best-known alternatives. Nero BackItUp is a good application if you want a fit-and-forget solution, and the other modules are by no means make-weights. ⊠ **Simon Williams**

VIRTUALISATION SOFTWARE

Parallels Desktop 8 vs VMware Fusion 5

PARALLELS
£65 inc VAT (£35 upgrade)

Contact
■ parallels.com/uk
Read more
■ tinyurl.com/bw82enL

System requirements
64bit-capable Intel
Mac; OS X 10.6.8 or later;
2GB RAM (in OS X 10.5
4GB is recommended);
700MB drive space
(plus 15GB for each
virtual machine)

Usability: ★★★★½
Features: ★★★★☆
Value: ★★★½☆

★★★★☆

Running Windows on a Mac is simple with virtualisation software, so you need never have to reboot to switch operating systems again. There are three clear options: the open-source and free but limited VirtualBox, or one of the two commercial packages, Parallels Desktop for Mac or VMware Fusion.

Either of the latter are easier to work with than VirtualBox, with broadly similar qualities and very decent performance. We took a closer look at these two powerful applications to see how they compare in their latest respective versions: Parallels 8 and Fusion 5.

Parallels Desktop 8
Parallels' core business is running Windows in OS X. Its Desktop 8 software officially supports OS X Mountain Lion, including full-screen mode and the new Retina displays. Notifications now pop up for certain actions, such as when taking a MacBook off mains power. This is noteworthy, since Parallels 8 has a more frugal power mode to ease the battery burden of this processor-intensive software. You can toggle power-saving on a per-VM basis from the Settings panel.

New features include the ability to improve video performance with up to 1GB of video memory. There's support for Windows 8 but, given the Mac's lack of compatible hardware, there's no touchscreen distraction. Parallels is priced at £65, or £35 as an upgrade from the two previous versions.

PARALLELS 8 has more features, many of which enhance its usability

VMware Fusion 5
On its debut, Fusion was well received for its stability and advanced Windows integration. These days, both Fusion and Parallels mix well with Windows, in their Unity and Coherence modes respectively. In Parallels' case, this integration is ironically muddied by an additional Crystal Mode: the difference between the two is not clear.

VMware and Parallels have spent five years vying for dominance, each leapfrogging their rival with new features and increased performance. But Parallels has been working harder, while VMware seems to have ramped down promotion and barely even mentioned this update to the press.

But Fusion 5 is a strong offering, available in two versions: standard (£38) and Professional (£79). The latter is little different, but adds locked-down VMs, restriction settings and can limit access to USB ports. There's also a Network Editor to customise virtual networking.

Using the VMs
Parallels' New Virtual Machine wizard makes installing from DVD or disc image easy, or you can create VMs from links to download Ubuntu, Google Android or Chrome OS. You can also migrate Windows from a real PC, or a clean install of Mountain Lion from the Recovery Partition on your Mac. Boot Camp is another choice if you have a partition dedicated to Windows.

Fusion 5 has a larger VM browser that more clearly shows a running machine in a big thumbnail. At a glance you can see how much of the virtual disk is being used by any selected machine.

The two apps differ in their approach to privacy. Whereas Parallels milks social networking, adding Twitter and Facebook links, VMware takes the more sober approach. And it doesn't phone home like Parallels, which does so on every launch to check your registration; it also wants to read your Address Book. Parallels collects

---

PASSWORD MANAGER

Sticky Password Pro

$30 (19)

Contact
■ stickypassword.com
Read more
■ tinyurl.com/cnraz6f

Usability: ★★★★☆
Features: ★★★½☆
Value: ★★★½☆

★★★½☆

You must use a different secure password for each account or site you visit. Trying to remember dozens of secure passwords borders on impossible, however.

Sticky Password Pro helps. It integrates with most browsers and web applications such as Skype and Thunderbird, and tracks all your logins and passwords.

All browsers now have password managers, but Sticky Password has features that go beyond that. It keeps the same login credentials

available to multiple browsers, so you can flip between Opera and Firefox and not worry which one holds your password.

A password generator provides pseudo-randomised strings of gibberish according to an assortment of rules: length, characters and so on.

Accounts can be searched from the main window by typing in part of the site name or its password. Those who prefer a less ad-hoc method will be pleased with the ability to

organise and group data, so you can sort logins and passwords into work and personal groups.

This latest version offers a new interface that makes it easier to move between categories of stored data. It also adds new features, such as bookmark management, and the ability to export subsets of passwords for sharing. For example, a set of passwords associated with accounts at your job can be exported for colleagues. Another new feature is the exclusion of specific sites.

data about how you're using it, although this can be switched off.

Both applications now support USB 3.0, although we had mixed results. After installing a Windows driver, we managed to use a Kingston USB drive with both apps, albeit at sub-USB 2.0 speeds. Meanwhile, a LaCie XtremeKey worked at near-native speed in Parallels, but wasn't recognised by Fusion.

In performance terms, Parallels continues its lead over Fusion with consistently faster results in our benchmarks. Using near-matched

Graphics performance shows the largest difference. Fusion hit a playable 52fps in Stalker: Call of Pripyat, while Parallels added almost a third more frames at 69fps. These results were achieved using a MacBook Pro with nVidia GeForce 650M graphics, 1280x800 resolution and Medium detail.

Other OSes are poorly supported compared to the cash cow that is Windows compatibility. A change in Apple's licensing terms from Lion means you can run non-server OS X inside OS X, but neither Parallels

Parallels has other issues with OS X guests, such as the inability to resize VM guest disks. Meanwhile, VMware has poorly configured keyboard shortcuts – using Cmd, Q to quit an app in fact closes VMware, for example.

Essential features such as drag-and-drop between host and VM are missing in action for both, and even cut-and-paste support proved to be patchy.

A good reason to run OS X as a VM is for host system security, allowing a relatively sandboxed OS to run exploited software such as Oracle Java. Sadly, current versions of Java won't run on either.

Linux

Another reason for virtualisation is to test and explore desktop Linux systems. This was made trickier in recent years as the familiar distributions now add hardware-accelerated video to smooth and enhance the GUI. Both VMware and Parallels can now render these graphics on some popular distros. However, they are also slow to update Linux support when new distros are released.

Verdict

Both VMware and Parallels offer solid performance and useful features when running Windows on a Mac. If you need the fastest performance, Parallels still edges out VMware Fusion, although the latter is available for half the price. ⊠ Andrew Harrison
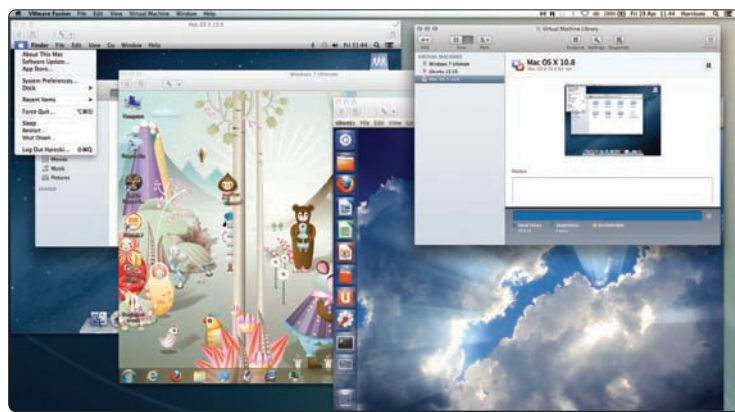
FUSION 5 has good stability and now better supports Linux distros

configurations of Windows 7, two active processor cores and 2GB of memory, Parallels scored 4,305 points in PCMark 7, 8.6 percent faster than Fusion's 3,965.

In Geekbench the results were more evenly matched, with Parallels just 3.1 percent faster at 8,162 points against Fusion's 7,919.

nor Fusion give an experience as polished as Windows VMs.

Hardware graphics acceleration is the notable omission from both apps, meaning jerky screen animations and funky disco rendering of certain elements, such as Safari's Top Sites page. Adobe Flash is unworkable in both, too.
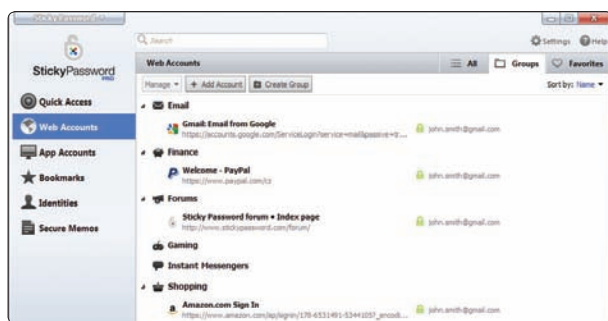
STICKY PASSWORD PRO manages all your website login details

While Sticky Password Pro has a rapid schedule for bug fixes and compatibility updates, during our testing we experienced two severe bugs. We were experiencing constant Firefox crashes when

we upgraded to version 18 of the browser. Sticky Password was listed compatible, but it was the culprit. And while testing the bookmark feature, our computer would spike CPU usage and hang, forcing a reboot. This was from a related issue with Opera passwords, which required us to purge our Opera info. The Firefox bug was fixed; the Opera bug remains a known, albeit rare, issue.

We've been using Sticky Password for years with no issues,

and it's not usually unstable. It's an excellent product that, when used regularly to generate and manage unique passwords, can reduce the risks of having a single hacked server expose all your other accounts.

Verdict

Sticky Password is virtually indispensable once you use it regularly, which makes the occasional stability issues more frustrating. ⊠ Ian Harac

GAME

Tomb Raider

£29 inc VAT

Contact
- tombraider.com

Read more
- tinyurl.com/bnjd247

System requirements
Dual-core processor
(2.1GHz AMD Athlon 64
X2 2.1GHz, 1.86GHz Intel
Core 2 Duo); Windows
XP/Vista/7/8; 2GB RAM;
12GB drive space; DirectX
9 graphics card with
512MB VRAM

★★★★☆

TOMB RAIDER: Lara's friends come across as irritating stereotypes who steal focus and time from adventuring

If in doubt, reboot. That seems to be the mantra of the games industry of late, and usually entails making franchises grittier and darker, too. The adventures of Lara Croft are no exception, with this new Tomb Raider starring a younger, less objectified Lara experiencing all manner of horror as she learns to survive, adventure and pilfer relics.

This Tomb Raider is a rather different affair from the intricate puzzle-dungeons and platforming for which the series is known. Shamelessly taking cues from rival Indiana Jones-aping series Uncharted, much of the game is a heavily scripted blend of cinematics, quick-time events and jumping. It's colour-coded, predetermined as the environment explodes, crumbles and collapses around the ever-screaming, ever-falling Lara.

Tomb Raider is spectacular to behold, but intermittently exhausting and preposterous – logic and physics are thrown to the winds, and every other five minutes this hitherto adventure-free teenager miraculously survives a fall that would kill an elephant.

The game also has an unfortunate tendency to switch between interactive and cinematic without warning, so at times you might be trying to move a character who's already controlling herself, or failing to react to a threat that you could have sworn was happening in a cutscene. Tomb Raider's certainly dramatic, but if the developers wanted to make a movie that badly perhaps they should have made one.

Outside of scripted mania and irritating quick-time events, the game improves enormously. Choose

LARA CROFT finds herself in all manner of apparently inaccessible places

to ignore the persistent objective arrow and there are some huge and gorgeous environments to explore, strewn with satisfyingly difficult-to-reach items and secrets.

Tomb raiding

It's here that the game most evokes the series whose name it takes, as Lara uses navigational logic, a few gadgets and not a little derring-do to make her way to apparently inaccessible places.

It's a refreshingly interactive and unpatronising break from the constant falling and rollercoaster-riding of the storyline, and a real shame that it's not the backbone of the game. Especially entertaining are the optional secret tombs, a handful of deathtrap dungeons hidden away and containing grand-scale puzzles with big rewards. There's not enough of these, though, and they're all too easily missed. Without them, there's no tomb raiding whatsoever.

Taking extra prominence is regular gunplay. There's more shooting than this series has ever had before. It's very well-done, offering multiple angles of approach and a choice between stealth (of a sort) and all-out fury, plus a few combos and finishing moves if you want to get up close and personal. The body count's a little jarring, given that the storyline shows us the first time Lara killed a man and how badly it affected her.

As for the original tale of a frightened young girl who was stranded on a hostile island full of cultists and mercenaries became

the confident, indefatigable Lara Croft of legend, well... It succeeds at removing Lara from the lad's mag culture, re-establishing her as a more believable character in both demeanour and physique. Her oddly frozen face undoes some of the good work here.

Significantly less successful is the back story of the island – something to do with cultists and a sun god – and Lara's contingent of friends and colleagues, also stranded on the island. We're expected to immediately care for them, with next to nothing done to earn this; instead, they come across as irritating stereotypes who steal focus and time from the adventuring.

Fortunately, it's that adventuring on which the game lives or dies. It's diluted with scripting and ludicrous cutscenes, but resist that where you can and this new Tomb Raider's definitely on to something.

The search for parts and resources to upgrade Lara's weapons is satisfying, too, as her slim arsenal evolves rather than expands. That 2013 gaming vogue, the bow and arrow, performs a welcome duty here, able to both perform stealth kills and solve environmental puzzles.

Verdict

Tomb Raider is uneven, too obsessed with trying to be a movie and to copy its great rival Uncharted at the expense of, well, tomb raiding. But underneath the bluster it definitely contains a modernised take on the adventuring for which the series is famous. ⊠ **Alec Meer**

WINDOWS OR LINUX
HOSTING

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Performance: ★★★★☆
Value: ★★★★☆

★★★★☆

PROJECTOR

BenQ MS517

With its classroom-friendly features and pricing, the BenQ MS517 directly targets the educational sector. At £237 you won't get the highest quality, but the projector is adequate for basic classroom use.

A brightness rating of 2,800 Ansi lumens is very high, and it's bright enough that the MS517 will project in broad daylight.

The resolution is limited, though, at just 800x600. Schools may not need HD quality, but most software demands at least 1024x768 to correctly operate.

3D is optional, although the limited resolution and the need to buy a pair of glasses for each viewer may leave this feature as little more than a tick on the specs list.

No dullard to look at, the BenQ's swish and glossy black casing should catch the eye of even the most particular of pupils. We also like the clear menu system, and the clean control panel with its bold subtitles – it's very easy to differentiate between ports and connectors.

You get the usual array of pre-digital connections, namely VGA, composite, S-Video and analogue audio, along with HDMI. It also has a pair of speakers. These, though, lack clarity, and if you're wanting to add audio then you'll certainly want to tack on a better set.

The MS517 won't create a particularly large picture, but you can beam a 50in image from around 2m. Huge size may not be necessary in a classroom, so this should be more than sufficient.

Keystone is typical, and covers vertical correction. You don't get any of the sophisticated aids supplied with the likes of the Epson EB-1945W, but the BenQ is less than a quarter of that projector's price.

The BenQ projector does have some nice educational-themed features. The screen can quickly be blanked when the image is no longer needed, while a series of teaching templates allow you to display a number of designs, from manuscript paper to charts.

We suspect that most teachers will already have software that allows them to display such designs when required, but it's still a nice addition that could prove helpful.

A 13,000:1 contrast ratio is touted, although the results fall far short of such a claim.

Given the price tag and resolution, the BenQ MS517 was never likely to offer a polished colour palette. The results are not displeasing, but the palette lacks depth and accuracy, with a slightly yellow tinge present throughout. We can also see problems for classrooms with the dreaded Rainbow Effect, and the MS517 seems more prone to this than many other projectors we've recently tested.

Few of us are particularly sensitive to this strange phenomenon induced by DLP technology, but it's possible that one or two children within a classroom will be particularly afflicted, and will have their viewing disrupted by multicoloured artefacts that appear to randomly fly at them. With that in mind, you probably won't want to use this projector for showing many black-and-white clips.

Verdict

The colour palette isn't accurate, and the native pixel count is too low for much computer-based use. But the attractively styled BenQ can handle light-filled rooms, and in general does a proficient job of projecting images. ⊠ **Robin Morris**

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

★★★☆☆

PRINTER

Canon Pixma MX395

While cheap home printers are plentiful, low-cost home-office models aren't so common. Canon is targeting this market with its Pixma MX395, which offers print, scan, copy and fax features for just £40.

The fax component is bolstered by a 30-sheet auto document feeder (ADF), allowing you to feed in bundles of documents at a time.

You don't get any of the extras associated with home models. There's no Wi-Fi or ethernet connection, nor a memory-card drive or support for USB drives. For an extra £14 the MX455 adds support for USB sticks and Wi-Fi.

The substantial yet delicately curved MX395 makes an attractive addition to any desk. Its relatively sleek control panel is very neat, given the number of buttons it needs to satisfy fax users.

It doesn't have the customisable control panel of more expensive Canon models, so you're stuck with the full 25-button panel regardless of whether you're using the fax.

The interface is reasonably simple to navigate via its text display. We found the printer mostly behaved as expected, so you may not need to use the interface often.

The paper feed is awkward, though. The output tray is situated directly above the 100-sheet input tray, and finished prints quickly obscure the input tray.

It's difficult to ignore the MX395's software bundle, and the obtrusive Quick Menu automatically loads up, consuming a good chunk of your desktop space before you've fired up a single application.

You're presented with a rich choice of options, from the cards-and-calendars creator Creative Park Premium to the photo scrapbook My Image Garden. An Easy-Webprint Ex add-in for Internet Explorer allows you to quickly grab and print sections of web pages. How many of these programs will be of interest to business users is open to question.

The MX395 wasn't especially fast in our tests, churning out text pages at a rate of 9.5 pages per minute

PRINTER

Kyocera Ecosys FS-2100D

Specification
Mono laser printer;
1200dpi print resolution;
quoted print speed:
B=40ppm; actual print
speed: B=29.7ppm; USB
2.0; 500-sheet input tray
+ 100-sheet multipurpose
tray; up to 2,600 sheets
with optional trays;
128MB memory (1,152MB
max); auto duplex; toner
cost: B=£85; print yield
(pages): B=12,500;
380x416x285mm; 13.5kg

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

★★★☆☆

Following on from the FS-4300DN comes this slimmed-down mono laser printer from Kyocera. It's around a quarter of the price, but in many respects these two models have much in common.

Models in Kyocera's Ecosys range very closely resemble each other. The casing is chunky and robust, but not overly heavy. At 13.5kg it's 1.1kg lighter than its big brother, and by no means weighty for a business laser at this price.

The black-and-cream casing makes the FS-2100D look more like an architectural experiment from the 1960s, especially with a curved turret comprising the front right corner. This turret is mirrored in the optional paper trays.

In common with its big brother, the FS-2100D comes with a sizeable 500-sheet tray as standard, along with a 100-sheet multipurpose tray. You can add up to four 500-sheet paper trays, for a maximum of 2,600 sheets. That figure was decent in the high-end FS-4300DN, but in the £233 FS-2100D it's outstanding.

As with the FS-4300DN, the top-mounted control panel is wide-ranging and detailed, giving you control over most aspects of operation, while strong monitoring facilities give network managers easy control. You can access files from USB drives for added security.

Standard connectivity options are rather lacking, with only USB 2.0 offered. You can add ethernet for £125, but if you do need it you'd be better off spending an extra £72 for the FS-2100DN.

Either printer can be upgraded to wireless 802.11b/g/n facilities, for the exorbitant fee of £289. The souped-up FS-2100DN also has more memory than the cheaper FS-2100D, matching the FS-4300DN's 256MB. The FS-2100D here comes with just 128MB.

Up to 40ppm is boasted by the Kyocera. In real-world printing, you're unlikely to achieve this since the printer requires around 10 seconds to get started.

Once the first sheet has come through, subsequent sheets are almost instantaneous. Even with the 10-second startup, we were able to achieve speeds of 29.7ppm. If you're printing large jobs you can expect that to increase to the mid-30s.

Duplexing is provided, although the speed falls to a rather more sluggish 15.4ppm – a drop of close to 50 percent, which isn't ideal.

Even after experimentation, we couldn't get Kyocera's output as dark as we'd like. This is a common complaint of the Ecosys printers. The characters also fell short of the

crisp perfection we expect from the best laser printers. Graphics reproduction suffered similarly.

Running costs aren't as low as with the FS-4300DN, with the FS-2100D's toner generating half as many pages at a time. They are a little cheaper to compensate, although the cost per page is still almost 0.3p more. Nonetheless, close to 0.7p remains very cheap for a page of text, with few other printers able to get anywhere near such low running costs.

Verdict

Those needing ethernet would be advised to buy the FS-2100DN. Otherwise, the FS-2100D has some very good features, including superb paper handling. Running costs are low, and speed is generally high. The hit on duplex printing is disappointing, though, and those needing the best text quality should look elsewhere. ⊠ **Robin Morris**

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for business correspondence. If text is a priority, those on a limited budget should buy a cheap laser printer such as the Pantum P2050.

For colour graphics, though, it's a different matter. Here, the MX395's output is bright and cheery. Even at the fastest 3.5ppm mode, colour fidelity is surprisingly good. With the addition of photo paper, the best results in the highest-quality 0.6ppm mode are sparkling.

The scanner is also highly effective, and produced faithful scans with relative ease.

The MX395 doesn't use separate colour tanks, so you have to buy only two cartridges for it. On the down side, if you use more of one

colour than the others you will need to replace the entire tank long before it's empty.

The Canon won't prove a cheap printer for text, with mono prints costing 2.8p a page with the most economical high-capacity cartridges. Colour isn't much more expensive, working out at around 4.7p a page. That price may double should you wish to print full-page photos.

Verdict

Canon's Pixma MX395 is too cheap for its own good. It offers fax facilities for less than £50, but the lack of network connectivity and patchy text quality won't suit professional use. ⊠ **Robin Morris**

(ppm). The quality at this level is too patchy to be used for anything other than draft documents. While the middle 7.4ppm mode is darker, it also lacks text clarity.

Even the highest 1.9ppm mode lacks the quality of output required

PRINTER

Dell C1760nw

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

★★★★☆

The Dell C1760nw Is successor to the C1660w, and has a few useful extra features thrown in.

Outwardly little has changed. A squat, rectangular printer, it has identical dimensions and is styled in the same matt black finish. The C1760nw weighs fractionally more at 10.6kg, but feels just as sturdy.

A drop-down 150-sheet input tray remains at the front, and Dell has added a removable 10-sheet bypass tray above. The top-mounted output tray holds 100 sheets.

The rather discreet control panel on the top is unchanged. It's very easy to operate via five buttons and a two-line text LCD. From here you can check remaining pages, for example, as it constantly monitors ink capacity. The screen is backlit, but there's been no improvement to the non-tilting monitor. Auto duplex is also absent.

One area Dell has improved is connectivity. Dell now supplements with 802.11b/g/n Wi-Fi and USB 2.0. The Wi-Fi link is quick to establish,

while Android and Apple devices can be linked via the Mobile Print app.

Print speeds have been beefed up, despite the C1760nw retaining the same 384MHz processor and 128MB of memory as its predecessor. Unlike most manufacturers that like to exaggerate print performance, Dell's claimed speeds of 15ppm for mono and 12ppm for colour proved accurate in our tests.

There are no dedicated settings for using photo paper, but we were pleasantly surprised by the Dell's standard of colour reproduction on plain paper.

There's a slight yellow bias, but we saw a good amount of detail. Documents that comprise both text and graphics revealed bold, unbroken text and brighter colours than that of comparable models.

The ink cartridge capacities have been increased, but the running

costs still work out at 5.7p per page using the standard black ink cartridge, and a whopping 20p per page with the colour toner.

The High Capacity black cartridge reduces the price per page to 2.94p, while the colour cartridges work out at 12.6p. Note that a set of these high-capacity CMYK toner cartridges will cost £238, exceeding the purchase price of the printer.

Verdict

Dell has made some necessary upgrades to its budget colour laser printer, adding a network connection, expanding paper input and speeding up the print engine. But running costs are much higher than average. ⊠ **Martyn Clayden**

ACCOUNTING SOFTWARE

Sage 50 Accounts 2013

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

★★★★☆

Billed as the UK's market-leading accounts software, Sage is designed for small- to medium-size businesses, and integrates with Microsoft Office, internet banking and Sage's payroll software.

The 2013 versions of Sage 50 Accounts are said to have been developed following extensive customer feedback and user-group consultations. For the first time the mobile app is available for Android, joining BlackBerry and iPhone.

Improvements include: better VAT, month- and year-end processing; easier selection, exporting and filtering of reports; a new Report Designer that lets you create bespoke reports and invoices; and an enhanced e-invoicing function that makes it easier to send invoices via email.

Up to two users can manage a business' cash flow, calculate VAT, manage products and sales, and record customer/supplier details.

We tried the trial version of Accounts Professional. You can

practise using Sage 50 with a fake company before starting for real, which will help prevent you making mistakes with real company data.

The sidebar lists tasks for each business area, making it easy to dive in and get to work. Setting up new customers is easy and comprehensive, as is viewing their detailed records. Analysis of projects, stock, aged creditor and debtor reports, payment management records, and invoicing and purchase order processes are easily performed.

Much of this detail would come in useful for a company's accountants

or auditors, and should ease the preparation of tax returns.

The experienced SME owner or accounts department should find their needs fulfilled as their business grows. Startups, freelancers and micro-businesses may find some of the detail and features a little less suited to their needs.

Verdict

Sage 50 Accounts 2013 is packed with functions for recording every detail of a business. It should be particularly helpful to businesses trading in physical products. ⊠ **Santhie Goundar**

Touchscreen laptops

**Windows 8 touchscreen devices come in all shapes and sizes.
Cliff Joseph rounds up the best laptops and hybrids**

As soon as you see the tiled Start screen, you realise that Windows 8 is a giant step forward for Microsoft. That brightly coloured screen represents Microsoft's first real attempt to bring Windows into the brave new world of touchscreen computing.

Of course, Windows 8 isn't designed only for tablets. It also has to run on conventional PCs, which is why the traditional Windows desktop can still be found lurking just beneath the surface.

This split-personality approach is either a stroke of genius or a clumsy compromise, depending on your point of view. What is clear is that Windows 8 represents a real challenge for PC manufacturers as they attempt to develop new hardware designs that will tempt you into upgrading your existing 'untouchable' PC.

With that in mind we've looked at some of the latest touchscreen devices that are designed to work best with Windows 8.

Some of the products reviewed here take a cautious toe-in-the-water approach, simply bolting a touchscreen on to their existing laptop designs. These models are hardly innovative, but they provide a gentle introduction to the touch controls of Windows 8, while still allowing a good old-fashioned keyboard and touchpad for when you need to get down to some office work.

Inevitably, such devices suffer from varying degrees of wobble when you prod their touchscreens. Most manufacturers fit extra-stiff hinges, but these don't eliminate the problem and mean you'll need to use two hands to open most laptops: one to hold down the base, and the other to raise the lip.

Other products more enthusiastically embrace Windows 8, taking entirely new hardware designs that attempt to provide the best of both worlds. These laptops combine the performance and flexibility of a laptop with the greater mobility and touchscreen of a tablet.

The result is a new breed of convertible (or hybrid) device that can function as both a laptop and as a tablet. In tablet mode, most models let you rotate the screen and use it in either landscape or portrait mode - something you can't do with a traditional laptop.

Some of these devices tend to lean more in one direction than the other, though. Dell's XPS 12, for example, initially looks like a conventional laptop, with a 12in screen and a powerful Intel Core i7 processor that provides near-desktop-level performance. But its rotating screen allows you to quickly flip the display and turn the entire unit into a tablet – albeit a rather large and heavy one.

Other companies, including Asus and HP, put the emphasis more on mobility. They start with a lightweight tablet design that can easily be used for web browsing or composing a quick email, but then provide the ability to connect a keyboard so that you can also fire up Microsoft Word or Excel when required.

There's no right or wrong approach here: a device that's ideal for one person may be inappropriate for someone else. Business users may prefer a more conventional laptop design, while undemanding home users may find a lighter tablet device more suitable for casual web browsing or watching streaming video.

Alternatively, if you need a touchscreen laptop that has enough power for editing video or playing some games, you'll want to check out our benchmark results on page 60.

Optical drives are making a decisive exit from the ultraportable scene, so bear this in mind if you know you'll need to read or write CDs or DVDs. USB DVD writers are inexpensive, starting at around £25, but they're not as convenient as built-in drives for regular use.
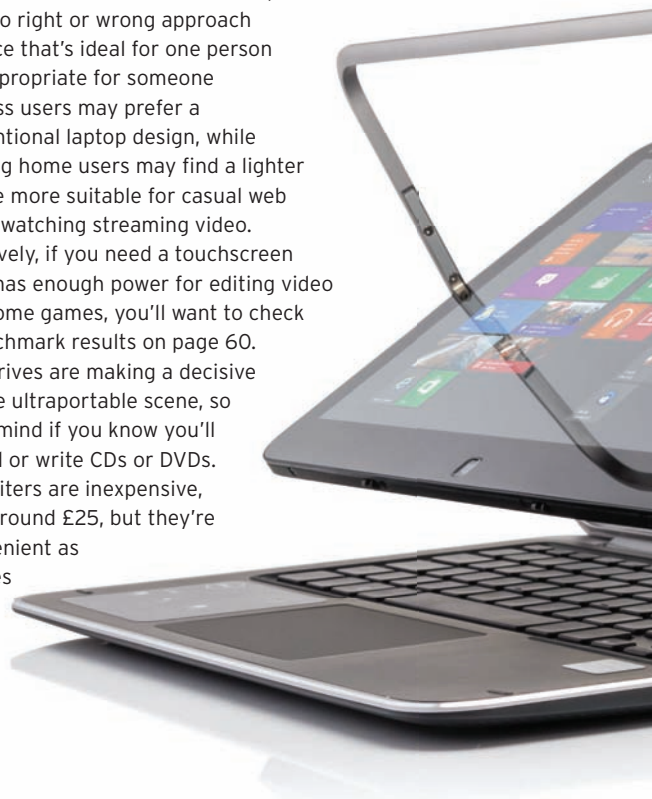
Photography by Dominik Tomaszewski

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

ACER ASPIRE S7-391

£1,500 inc VAT • acer.co.uk • tinyurl.com/cnLw3df

We admired the elegant design of the original Aspire S7 (reviewed at tinyurl.com/dyaj46e), and this latest model adds to Acer's sleek Ultrabook design a powerful Core i7 processor.

The first thing you'll notice about the S7 is how remarkably thin it is – at just 12.5mm it could spur even Apple's MacBook Air to diet. The S7 weighs just 1.3kg, which means that you can carry it around in one hand like a paper notepad.

You'd be forgiven for assuming the Aspire S7 is a fragile waif, but it's well built and feels sturdy. The 13.3in touchscreen is firmly supported, and you can't help but pick up the S7 and turn it around, admiring the sheer quality of that slimline design.

The jury may be out on the usefulness of touchscreens on standard laptops (they're uncomfortable to use for anything except short periods), but the screen on the S7 responds quickly and smoothly as you flick around Windows 8's so-called Modern UI.

And even if you never lay a finger on the screen, you'll still admire its full-HD 1920x1080 resolution and bright, sharp image. It has good viewing angles, too, so it will work equally well for watching videos as giving presentations in the office.

But, as with most laptops these days, the screen is annoyingly reflective – especially in offices with harsh overhead lighting, where glancing at the screen can be like looking into a mirror.

The keyboard and touchpad are both large and comfortable to use, so you can get plenty of work done when you're on the move, and even the speakers produce a fuller sound than most.

A Core i7 processor runs at 1.9GHz (3GHz with Turbo Boost), and is paired with 4GB of RAM. The S7 broke the 5,000-point barrier in our PCMark 7 test, and will effortlessly handle most tasks. It feels fast, too, thanks to the 256GB SSD, which booted Windows in 6 seconds.

The integrated graphics chip isn't ideal for full-resolution gaming, although it managed 31fps in Batman at 1366x768, Low detail.

Battery life was measured at 4 hours 20 minutes. That's not bad, but we've seen several Ultrabooks that can hit 5 hours.

VERDICT: There's room for improvement in battery life, but the slim, light design of the S7 is difficult to beat if you're looking for a truly portable laptop that has enough power to handle some serious work when you're away from the mains.

Build	★★★★☆
Features	★★★☆☆
Performance	★★½☆☆
Value	★★★★☆
Overall	★★★½☆

ASUS VIVOTAB SMART ME400

£400 inc VAT • uk.asus.com • tinyurl.com/c6awzgp

There have been several versions of the VivoTab in its brief lifetime, with different screen sizes, add-on keyboard options, and a choice of either Windows RT or Windows 8. For the new VivoTab Smart, Asus has settled on a compact 10.1in model that runs Windows 8, but doesn't include a separate keyboard.

It's a well-designed tablet that weighs just 580g and is 9.7mm thick, so it's very light and easy to carry around. The 10.1in screen has a resolution of 1366x768 pixels, and uses an IPS panel to provide a bright, attractive image with good viewing angles. Sadly, this screen's glossy finish can make it very reflective.

The VivoTab Smart has a dual-core Intel Atom Z2760 processor running at 1.8GHz, plus 64GB of storage. A full version of Windows 8 means you can use legacy Windows software on the VivoTab.

In PCMark 7 we recorded 1,409. That's a poor result, yet the VivoTab feels snappy and responsive when navigating Windows' Modern UI. It's also more than fast enough for running Word and Excel. The 2GB of memory is stingy, though, and doesn't allow much scope for multitasking or working with intensive applications.

While Windows 8's Start screen is ably navigated using the VivoTab's touchscreen, dipping into the traditional Windows desktop or using apps such as Word feels fiddly: this software simply isn't designed for touch operation, especially on such a small screen.

If you're going to spend much time in the Windows desktop, you ought to budget for the £89 TranSleeve. This combines a magnetic cover and a slim Bluetooth keyboard with a separate touchpad, but the keys have little travel and won't be comfortable to use for anything other than typing a quick email or a few notes.

The VivoTab uses a Micro-USB port for charging, but there's no adaptor included that would allow you to connect a memory stick or other devices that have a full-size USB connector. A microSD slot, NFC, Bluetooth and Wi-Fi connectivity allow quick file transfer.

We were impressed with the VivoTab's very good 8Mp rear camera (there's also a 2Mp webcam), and its 7-hour battery life.

VERDICT: Asus has produced a tablet that can compete with any of its Windows, Android or iOS rivals. If you need to run existing Windows software on a light and portable device then the VivoTab provides a strong alternative to Microsoft's own Surface tablet.

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

PC ADVISOR
RECOMMENDED

DELL XPS 12

£1,299 inc VAT • dell.co.uk • tinyurl.com/d497bzp

The XPS 12 is one of the more successful examples of a hybrid mobile device that can function as both a laptop and a tablet.

Dell describes the XPS 12 as a 'convertible Ultrabook'. Certainly, it ticks all the right boxes on the Ultrabook side of things. The 1.52kg XPS 12's smart black-and-silver case is just 20mm thick, so it's easy to carry around. It's also sturdily built, with a layer of tough Gorilla Glass to protect the screen.

That 12.5in touchscreen is a real eye-catcher, too. Its 1920x1080 resolution is very bright and sharp, and it looks great when watching video or browsing your photo library.

The use of an IPS panel ensures wide viewing angles (close to 170 degrees), which is crucial on a device used as a tablet: it needs to be easily viewable in every position between laid flat on the desk and upright. The screen is another glossy, mirror-like model, however.

When you want to use the Dell as a tablet you simply flip the screen in its frame and close it against the keyboard. The screen is highly responsive and ideal for web browsing or interacting with apps.

The large screen makes the Dell larger and heavier than most tablets. You can't pick it up with one hand while browsing the web, and you may prefer to rest it on your lap in tablet mode.

Prices start at £999 for a model with an i5 processor, but we tested the flagship model with a Core i7 processor running at 1.9GHz (3GHz with Turbo Boost), 8GB of memory and a 256GB SSD.

This combination turned in 4,854 points in PCMark 7, meaning the Dell won't break a sweat when running Microsoft Office or completing more demanding tasks such as photo- or video editing.

Battery life is good, and the Dell recorded a full 5 hours in our video-streaming tests. You should be able to get a full working day's life from it; after hours, the XPS 12 can even handle a spot of gaming.

The integrated Intel HD 4000 graphics struggle at the screen's native 1080p resolution, and the Dell managed only 9fps in Batman: Arkham City (DirectX 11, High detail). We dropped the resolution to 1366x768 and the detail to low and saw a far smoother 34fps.

VERDICT: Its tablet mode isn't entirely successful, but the XPS 12 will earn its keep as a powerful, lightweight Ultrabook that you can use for work on the road or in the office. The tablet mode is a nice bonus for when you want to have a bit of fun with Windows apps.

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

PC ADVISOR
RECOMMENDED

HP ENVY X2

£799 inc VAT • hp.com/uk • tinyurl.com/cpxnb3d

HP's Envy X2 is one of the better convertible devices we've seen, and it works well as a tablet or a laptop. It has excellent battery life with or without its keyboard dock, too.

At first glance the X2 looks like a compact 11in Ultrabook, with a striking resemblance to the MacBook Air. It's a little bigger and heavier than Apple's laptop, though, at 1.4kg and 19mm thick.

This is more impressive when you consider that both screen and keyboard contain batteries. At the flick of a switch, you can detach the 700g screen and use it as a standalone tablet.

The 1366x768 display is excellent, with an IPS panel that produces an extremely bright and colourful image. Viewing angles are close to 180 degrees, too, but the screen is very reflective.

In tablet mode battery life is impressive, with the X2 living up to HP's claimed 7 hours in our video streaming tests, and up to 14 hours with the dock attached. The keyboard unit itself adds a pair of USB 2.0 ports, plus an HDMI connection.

When you need to get some work done you simply connect the keyboard to create a neat little laptop. Despite the compact design, the keyboard and touchpad are large and comfortable to use. The keyboard, in particular, has a nice action, so this is a device that you'll have no qualms over using for some serious typing.

The Beats Audio speakers are a let-down. Higher frequencies sounded good in our tests, but the overall volume is poor and bass virtually non-existent.

Performance doesn't rival that of an £800 laptop. The X2 has an Intel Atom processor running at 1.8GHz, a modest 2GB of memory and 64GB of solid-state storage. This combination produced 1,402 points in PCMark 7 – an unimpressive score, yet evident of adequate performance for basic tasks such as web browsing, streaming video and running Microsoft Office.

Don't even think about playing the latest Windows games – Batman: Arkham City ran at a slideshow-like 2fps even on the lowest graphics settings at the native 1366x768 resolution.

VERDICT: Given the modest performance, the well-designed HP is unfortunately rather expensive. However, it can handle most tasks, and its convertible design and impressive battery life mean it will continue to earn its keep long after most laptops have run flat.

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

SONY VAIO T13 TOUCH

£739 inc VAT • sony.co.uk • tinyurl.com/ccpdkbq

Sony's Vaio T13 doesn't turn into a tablet or do anything particularly exciting – it is simply an updated version of last year's T13 Ultrabook with a touchscreen bolted on. However, it provides good performance and a lightweight, portable design at a competitive price.

The T13 is well built, with a sturdy chassis made of magnesium and aluminium (the keyboard panel is plastic, though). At 1.6kg it's by no means the lightest Ultrabook around, but it's undoubtedly an ultraportable. You can easily pick it up with one hand, and slip into a backpack its 19mm-thick chassis without it weighing you down.

The original T13 had relatively narrow viewing angles, but this touchscreen version is better. The panel is bright and sharp, with better (if still not great) viewing angles.

The 13.3in display has a resolution of 1366x768 pixels, which is adequate for a screen of this size. Video looks fine, and shortcuts on the Windows desktop are large enough to quickly and easily tap.

Sony has also found room for a large, comfortable keyboard and trackpad, and we found it pleasant to type on. We were disappointed by the rather thin, tinny sound emanating from the speakers, though.

There are several models in the range, with a wide variety of build-to-order options. We tested the mid-range SVT1313C5E, with a Core i5-331U processor running at 1.7GHz (2.6GHz with Turbo Boost), 4GB of memory and a 128GB SSD.

In PCMark 7 the Sony produced a good score of 4,389 points. This level of performance means it will be able to handle office work with ease, along with the occasional more demanding task.

Battery life is also very respectable. We recorded 4 hours 45 minutes, so you should be able to get the best part of a full day's work out of the T13 when running basic business software.

Gaming performance was disappointing, though. Running Batman: Arkham City at 1366x768 resolution with high detail produced just 11fps. Turning down the graphics to the lowest detail settings bumped that up to a just playable 25fps, so the T13 is suitable only for Angry Birds and other 2D casual gaming fare.

VERDICT: No single feature of the T13 is particularly eye-catching or innovative. However, it is an ultraportable design with good performance and reasonable battery life for just £739, which is good value regardless of whether it has a touchscreen.

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

TOSHIBA SATELLITE P845T-101

£749 inc VAT • toshiba.co.uk • tinyurl.com/c6mn5Lu

In many ways the Satellite P845t is the most traditional laptop in this group, with a 14in display and a built-in DVD drive that brings up its weight to 2.2kg. It's not the kind of laptop you'd want to carry around on a daily basis, but it's primarily designed for home entertainment. And on that score it does very well.

It's disappointing that the screen provides only 1366x768 pixels, and we'd like to see a full-HD panel on an entertainment model such as this. It's also reflective, but it is at least very bright and clear.

It's tempting to dismiss the touchscreen as a 'me-too' gesture, but many people will find it more comfortable to use this large touchscreen than the 10- to 12in models found on comparable Windows 8 devices. Everything is physically larger, so it's easy to tap on small web links or desktop icons with your finger. You'll still want to use the large, comfortable keyboard and touchpad when interacting with legacy Windows programs, however.

The Harmon Kardon speakers stand out, with better volume and bass output than most laptops that we've seen.

The Satellite P845t is available with a Core i3 or i5 processor; our review sample had an i5 running at 1.7GHz (2.6GHz with Turbo Boost), 6GB of memory and a 640GB hard disk.

The 5,400rpm hard disk is the weak link here, and resulted in a modest score of 2,648 points in PCMark 7. However, the CPU is snappy enough to cope with most tasks, and the touchscreen feels smooth and responsive as you flick back and forth between apps.

The P845t can even handle the odd spot of casual gaming. Its integrated graphics managed 14fps when running Batman: Arkham City at 1366x768 resolution with high graphics settings; dropping to low detail settings we saw a playable 30fps.

The weight of the P845t means that you won't be carrying it around with you too often, but if you do need to work without being tethered to the mains then battery life is reasonable. We recorded 4 hours when streaming video over Wi-Fi, which is respectable for a laptop with these specifications.

VERDICT: Mobility isn't the P845t USP, and the touchscreen is likely to get only occasional use. However, the Satellite performs well enough for undemanding users, and should be a good choice for anyone who wants a versatile laptop for use at home or in the office.

PC ADVISOR TEST CENTRE

INSPIRING BETTER BUSINESS

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'This is my story'

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It reminds me of a story I heard about an elephant who had been chained up for so long he gave up trying to escape. It was only after he was set free that he came back to life.

Hearing that story came at the right time for me. I was inspired to start my own business and find freedom myself, breaking free was a lot easier than I first thought.

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Conclusion

If you want a conventional laptop with a large screen and keyboard for running Microsoft Office and other productivity apps then the touchscreen laptops from Sony and Toshiba are good choices. If you can afford it, though, the strong performance and ultra-lightweight design of the Acer Aspire S7 make it an outstanding Ultrabook.

Even so, we're not convinced that touchscreens add much value to standard laptops. Most people will get more out of the more innovative designs offered by Dell, HP and Asus.

The Atom-based HP Envy X2 and Asus VivoTab Smart offer rather modest performance, but are still capable of handling routine computing tasks perfectly well.

If you're on a tight budget then the VivoTab Smart is the obvious choice. However, the brilliantly designed Envy X2 justifies its higher cost with excellent battery life and a vastly superior keyboard. It's the better option if you're looking for an ultraportable convertible device that will earn its keep on the move.

If you want true laptop power combined with the convenience of a tablet, Dell's XPS 12 that comes closest to providing the best of both worlds. It's not cheap, but its price isn't outrageous when compared to more conventional Ultrabooks such as the Acer. Don't forget you can opt for a less-powerful model to save some money.

Bear in mind that the XPS 12 is considerably larger and heavier than a conventional tablet and, given the comparably low battery life, it isn't meant to replace one either. But that ability to use the touchscreen as you would a tablet points the way forward to the real future of Windows 8 devices. ⊠

	ACER £1,500 inc VAT ★★★★☆	ASUS £400 inc VAT ★★★½☆	DELL £1,299 inc VAT ★★★★☆ PC ADVISOR RECOMMENDED	
Model	Aspire S7-391	VivoTab Smart	XPS 12	
Product code	NX.M3EEK.001	ME400	XPS 12	
Processor	1.9GHz Intel Core i7-3517U, dual-core	1.8GHz Intel Atom Z2760, dual-core	1.9GHz Intel Core i7-3517U, dual-core	
Operating system	Windows 8 64bit	Windows 8 32bit	Windows 8 64bit	
Memory	4GB 1,333MHz DDR3	2GB DDR3	8GB 1,333MHz DDR3	
Storage	256GB SSD	64GB memory card	256GB SSD	
Display	13.3in (1920x1080) gloss LCD touchscreen	10.1in (1366x768) gloss IPS touchscreen	12.5in (1920x1080) gloss IPS touchscreen	
Graphics	Intel HD Graphics 4000	Intel GMA	Intel HD Graphics 4000	
Connectivity	802.11a/b/g/n, Bluetooth 4.0	802.11b/g/n, Bluetooth 4.0, NFC	802.11a/b/g/n, Bluetooth 4.0	
Ports	2x USB 3.0, HDMI, mic, 3.5mm jack	Micro-USB/-HDMI via adaptor, mic, 3.5mm jack	2x USB 3.0, Mini-DP, mic, 3.5mm jack	
Card slot	SDHC	MicroSDHC	SDHC	
Optical drive	N/A	N/A	N/A	
Speakers	Stereo speakers	Stereo speakers	Stereo speakers	
Webcam	0.9Mp	8Mp rear, 2Mp front	1.3Mp	
Trackpad	105x60mm, two-button	N/A	105x50mm, two-button	
Other software	N/A	N/A	N/A	
Battery	2,340mAh lithium-ion, non-removable	25Wh lithium-polymer, non-removable	47Wh lithium-ion, non-removable	
Battery life	4 hrs 20 mins	7 hrs 10 mins	5 hrs 0 mins	
Dimensions (WxDxH)	323x224x12.5mm	263x172x9.7mm	317x215x20mm	
Weight	1.3kg	580g	1.5kg	
Warranty	1-year return-to-base	1-year return-to-base	1-year next-day in-home	
PCMark 7 score	5,038	1,409	4,854	
Batman (Low/High)[1]	31/10fps	Not tested	34/9fps	

[1]Framerates measured at 1366x768, DirectX 11, Low quality and 1920x1080, DirectX 11, High quality respectively

Battery life (hours)
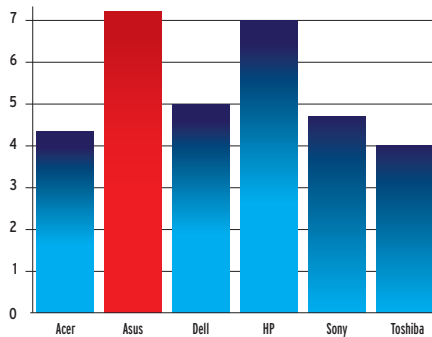
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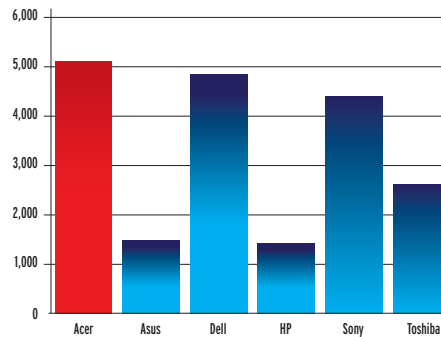
Batman (Low, 1366x768)
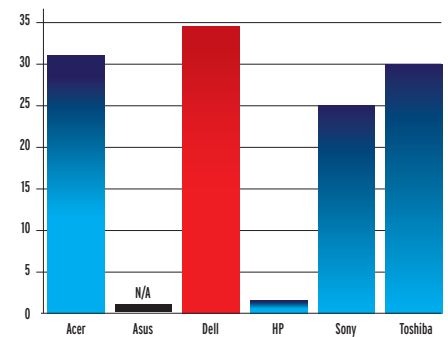
HP £799 inc VAT ★★★★☆ PC ADVISOR RECOMMENDED	SONY £739 inc VAT ★★★★☆	TOSHIBA £749 inc VAT ★★★½☆
Envy X2	**Vaio T13**	**Satellite P845t-101**
11-G030ea	SVT1313C5E	P845t-101
1.8GHz Intel Atom Z2760, dual-core	1.7GHz Intel Core i5-3317U, dual-core	1.7GHz Intel Core i5-3317U, dual-core
Windows 8 32bit	Windows 8 64bit	Windows 8 64bit
2GB 533MHz DDR3	4GB 1,600MHz DDR3	6GB 1,600MHz DDR3
64GB SSD	128GB SSD	640GB HDD
11.6in (1366x768) gloss LCD touchscreen	13.3in (1366x768) gloss LCD touchscreen	14in (1366x768) gloss LCD touchscreen
Intel GMA	Intel HD Graphics 4000	Intel HD Graphics 4000
802.11a/b/g/n, Bluetooth 4.0	802.11b/g/n, ethernet, Bluetooth 4.0	802.11b/g/n, ethernet, Bluetooth 4.0
2x USB 2.0, HDMI, mic, 3.5mm jack	1x USB 3.0, 1x USB 2.0, HDMI, VGA, mic, 3.5mm jack	3x USB 3.0, HDMI, VGA, mic, 3.5mm jack
SDXC	SDHC	SDHC
N/A	N/A	8x DVD±R/RW
Stereo speakers	Stereo speakers	Harman Kardon stereo speakers
8Mp rear, 2Mp front	1.3Mp	1Mp
90x45mm, two-button	100x55mm	100x50mm, two-button
N/A	N/A	N/A
2x lithium-polymer, non-removable	4,050mAh lithium-polymer, non-removable	48Wh lithium-ion, removable
7 hrs 0 mins (14 hours with dock)	4 hrs 45 mins	4 hrs 0 mins
303x206x10mm (303x206x19mm with dock)	320x220x19mm	349x234x24mm
750g (1.4kg with dock)	1.6kg	2.2kg
2-year return-to-base	2-year return-to-base	1-year return-to-base
1,402	4,389	2,648
2fps/not tested	25/11fps	30/14fps

Tiny computers look good, fit into the smallest of spaces, and usually offer cooler, quieter operation and lower power consumption than their desktop counterparts. Paul Monckton rounds up six highly capable mini PCs

D esktop PCs aren't very cool. Large, noisy, cumbersome boxes surrounded by cables aren't the kind of thing many of us would want to put up with if we didn't have to. But neither is the laptop always an appropriate solution.

Sometimes we want to work on a large desktop monitor, but have limited space available. Using an existing television as a display, rather than bringing an additional monitor into the room, may be a preferable option.

A mini PC can be an ideal solution in such cases. Based on small, low-power components, they take up a fraction of the space of a traditional desktop PC or laptop, and don't require unnecessary parts such as an expensive built-in screen, battery and keyboard.

Many are so small that you can mount them to the back of a monitor and create your own all-in-one PC. This has the advantage that you can upgrade your display without needing to replace the entire system.

Lower power consumption can also mean reduced cooling requirements and quieter operation, so you could use a mini PC as a media-centre PC without the distraction of whirring fans.

There are disadvantages, of course. A mini PC doesn't have enough internal space for a discrete graphics card or a desktop (3.5in) hard drive. You'll have to rely on integrated graphics solutions and, in most cases, a single laptop (2.5in) drive. All other upgrades and expansion will usually be achieved externally. In the case of really small PCs, such as the Zotac Nano XS, there may be room only for a plug-in mSATA SSD.

With this in mind, you'll need to pay particular attention to the connectivity options supported by a mini PC. If you want to hook up external storage, look for USB 3.0 ports. Chillblast's Fusion NUC instead provides Thunderbolt connectivity, but compatible drives are more difficult to

come by and simple Thunderbolt-to-USB 3.0 adaptors have yet to surface.

For connecting the PC to a standard LCD monitor you can use HDMI, but if you're thinking of creating a DIY all-in-one PC you'll need a DisplayPort, Thunderbolt, HDMI 1.3 (or above) or dual-link DVI port to connect a screen that has a native resolution higher than 1920x1200 pixels.

If you're creating a mini media centre you can pipe audio through your HDMI connector, but if you have an external music system with digital inputs you may also want an S/PDIF connector on your mini PC.

In keeping with the DIY approach, mini PCs typically ship without a keyboard or mouse, and often come without an operating system. This leaves you free to make your own choices. Remember to factor in the cost of these items.

Performance from a mini PC can be very good – especially when it uses an SSD as the boot drive. A wide range of processors are available, from low-end Intel Celeron chips to quad-core Core i7s with Hyperthreading. AMD processors are also available, with low-power versions that can help the mini PC run cool and quiet.

Whatever your choice of CPU, this component will also be powering the graphics – and this is where you're most likely to notice performance limitations. None of the mini PCs reviewed here have separate graphics chips. The faster Intel processors come with integrated HD Graphics 4000, which is good enough for low-end Windows gaming, but less expensive models provide poor graphics capabilities.

AMD processors often provide faster graphics. A good example is the A8-4555M chip found in Sapphire's Edge VS8. This incorporates Radeon 7600G graphics and is capable of much higher gaming performance, although it still falls far short of any proper gaming PC.

Mini PCs

Photography by Dominik Tomaszewski

APPLE MAC MINI

£959 inc VAT • apple.com/uk • tinyurl.com/c62Ltoh

One of the most instantly recognisable mini PCs, the Mac mini first appeared in 2005 as Apple's smallest and least expensive Macintosh. The mini is not the smallest PC in this round-up, but its larger footprint is offset by its ultra-low profile and internal power supply.

Its square aluminium unibody sets the standard for mini PC build quality and design. It's delightfully minimal, with all connecting ports hidden at the back. Notable among these are four USB 3.0 ports, plus HDMI and Thunderbolt. A basic mono speaker is also built-in.

Our review model had the fastest CPU of this group, a quad-core Intel Core i7-3270QM, and performance-wise proved difficult to beat. The Mac mini is also available with a 2.3GHz quad-core Core i7, which will save you £80 on the £959 price we've listed.

We recorded 3,286 points in PCMark 7, with the Mac mini beaten only by the Chillblast. Of course, that PC uses only solid-state storage (128GB), whereas Apple offers far more storage space with a 1TB hard drive. This 'Fusion' drive also includes a 128GB SSD.

Both systems use the same Intel HD Graphics 4000 integrated solution for graphics, but the Apple's slightly faster main processor meant it was just ahead of the Chillblast in our gaming tests.

This Mac mini is one of the more power-hungry of the group, and consumed 12.5W when idling at the Windows 8 desktop. This increased to 75W under load, which is well over double that of any other mini PC we tested. It's the price you pay for shoehorning such a powerful processor and two drives into a tiny case.

Build ★★★★★
Features ★★★★½
Performance ★★★★½
Value ★★★☆☆
Overall ★★★★½

PC ADVISOR
RECOMMENDED

Although the Mac mini features a cooling fan it was mostly quiet in operation. Only when we hit it with some really hard sums was there a large amount of loud whooshing in evidence, as the fan worked to keep the temperature below 100ºC.

VERDICT: A beautiful design, combined with wonderful build quality and plenty of storage, makes the Mac mini an attractive proposition. It's capable of class-leading performance when fitted with Intel's Core i7-3270QM, but it can run hot and the mini comes at higher cost.

CHILLBLAST FUSION NUC

£549 inc VAT • chillblast.com • tinyurl.com/crd3bqr

The Fusion NUC is Chillblast's take on Intel's Next Unit of Computing (NUC) platform. This tiny square-shaped PC incorporates a fast, low-power processor, 8GB of RAM and 128GB of solid-state storage.

It's a very cute-looking device, constructed from plastic but never feeling cheap (and it's not at £549).

A single USB 2.0 port graces the front of the PC. You'll find another pair of USB ports at the rear, along with HDMI, Thunderbolt and a Kensington security slot.

The 1.8GHz Intel Core i3-3217U processor helps the Fusion NUC to deliver surprisingly high performance. Its PCMark 7 score of 3,993 points exceeds that of any other mini PC reviewed here – even quad-core systems running at higher clock speeds, such as the Mac mini. It also makes for some impressive power consumption figures, with the PC requiring only 9W when idle and 19.5W at full-tilt. Fan-cooled when required, it remained very quiet in our tests.

However, the true key to this performance lies in the blisteringly fast 128GB Intel 525 Series mSATA SSD. This delivers storage performance that's in a different league to any other mini PC in the group. The 128GB allocation doesn't constitute a large amount of storage, though, so you'll almost certainly need to supplement this with an external drive or NAS box (at which point, much of the speed advantage gained from using an SSD will evaporate).

We appreciate the small size of Chillblast's Fusion NUC, but some key features missing. Where are the USB 3.0 ports? Built-in 802.11n

Build ★★★★☆
Features ★★½☆☆
Performance ★★★★★
Value ★★★½☆
Overall ★★★★☆

Wi-Fi is great, but why no ethernet? What about a card reader? Zotac's even smaller Nano XS AD13 Plus shows that size is no excuse for omitting these near-essential features.

VERDICT: Cute, but crippled. Powerful, but pricey. The Fusion NUC is very fast and incredibly power-efficient. It's very quick, thanks to that 128GB Intel SSD, but this will be too low in capacity for many users. Given the lack of USB 3.0 ports you'll need to find a Thunderbolt drive or dock to achieve decent speeds from any external drive.

PC ADVISOR TEST CENTRE

MSI WIND BOX DC110

£280 inc VAT • uk.msi.com • tinyurl.com/cgwa3we

The Wind Box DC110 is a competitively priced mini PC with a focus on home users who have limited desk space. Our sample was preinstalled with Windows 8, and ready to go out of the box.

When held aloft by its optional stand, the MSI's irregular parallelogram chassis appears to stick out of the desk like a dagger thrown into a floorboard. Its upward tilt angles its ports toward you and improves airflow from below.

It's an undeniably plastic creation, although it's not unpleasant to look at. A squeeze of the corner-mounted power button brings the unit to life; you're greeted by a Windows 8 screen with a small bundle of preinstalled software, including Office 2010 Starter Edition.

Connectivity isn't as good as we might have hoped. There are six USB 2.0 ports, but none supports USB 3.0 or eSATA. Thunderbolt isn't an option either. This means the 320GB of internal storage is limited to dawdling USB 2.0 speeds.

HDMI and VGA ports are provided, along with analogue and digital audio, while the top of the unit features a handy flash card reader.

Given the low price, you get a considerably less-powerful CPU than is offered by the competition. MSI lists a 1.1GHz Intel Celeron chip, which is not only slow but comes with an inferior version of Intel's integrated graphics. The Wind Box couldn't run our Aliens vs Predator gaming test.

So you can forget about gaming, creating HD media and such like, but the everyday tasks of web surfing, office applications and viewing HD video should all be more than adequately served by the Wind Box DC110. We recorded 1,608 points in PCMark 7.

With low performance comes low power consumption, and this unit will use only around 10W at idle or 23W when pushed.

VERDICT: A competitively priced mini PC with a good out-of-box experience for home users, the DC110 is also rather slow and lacks high-speed connectivity. The MSI also suffers considerably weaker graphics performance than the competition.

Build	★★★½☆
Features	★★½☆☆
Performance	★★☆☆☆
Value	★★★★☆
Overall	★★★½☆

SAPPHIRE EDGE VS8

£277 inc VAT • sapphiretech.com • tinyurl.com/bq8jsxj

With a 1.6GHz AMD A8 processor inside its black rubberised-plastic housing, Sapphire presents a unique proposition in our round-up with its Edge VS8. Integrated Radeon 7600G graphics arm this machine with considerably better gaming power than any of the competition.

The Edge VS8 offers a well-balanced set of features: its large 500GB hard drive is slower and more power-hungry than an SSD, but it's also less expensive and offers enough storage space that you may not need to resort to an external drive.

There are two USB 3.0 ports, along with four USB 2.0, HDMI and Mini DisplayPort connectors. Mini DisplayPort-to-HDMI and Mini DisplayPort-to-DVI adaptors are included in the box.

There's also digital and analogue audio, an SD card reader and a gigabit ethernet port. Annoyingly, the front-mounted USB 3.0 ports are located behind a removable tab, which we managed to lose.

Our system was supplied without an operating system. All the required drivers were supplied on optical media, so it's a shame that the system lacks such a drive. Our Windows 8 installation went without a hitch, however, and we were easily able to download the required drivers from Sapphire's website.

Performance-wise we were expecting more from the Edge VS8. A PCMark 7 score of 1,150 points seems uncharacteristically low, given the relatively high scores seen in many of the sub-tests.

But while it's by no means a gaming PC, it's miles ahead of the competition and will give you by far the best gaming experience.

The Sapphire's power consumption was a little higher than the rest but, even under full load, the system cooling fan remained relatively quiet. This means you won't have to sacrifice your peace in order to get faster gaming graphics.

VERDICT: The Edge VS8 delivers somewhat unimpressive general performance, but it comes into its own with multimedia and gaming. At just £277 you also get a good set of connectivity options and a roomy 500GB hard drive.

Build	★★★★☆
Features	★★★☆☆
Performance	★★★½☆
Value	★★★★½
Overall	★★★★☆

PC ADVISOR RECOMMENDED

TINYGREEN PC INTENSE PC PRO

£791 inc VAT • tinygreenpc.com • tinyurl.com/cm3u8gs

Build	★★★★½
Features	★★★★☆
Performance	★★★★☆
Value	★★★½☆
Overall	★★★★☆

If it weren't for the £959 Apple Mac mini, we'd baulk at the price of this £791 TinyGreen PC. But it does have some unique features, with industrial-strength build quality and an entirely fanless design.

The system is based on a dual-core Intel Core i7-3517UE processor, which runs between 1.7GHz and 2.8GHz depending on load. It delivers a useful level of performance, as revealed by a PCMark 7 score of 2,628 points, while retaining low power consumption. The power draw is increased by the use of a spinning hard drive rather than an SSD, but the passive cooling system is so well engineered that even under full load the processor temperature never exceeded 73ºC.

The Intense PC's ridged body is designed to radiate heat away from the internals without the need for a fan. The system isn't completely silent – listen closely and you can hear the 500GB HDD whirring away inside – but, under stress, no competing fan-cooled system is as quiet as the TinyGreen PC.

Connectivity options are impressive, with two gigabit ethernet ports, S/PDIF, HDMI, DisplayPort, two eSATA and six USB ports (two of them USB 3.0). There's also Bluetooth and Wi-Fi.

A unique feature of the Intense PC is its interchangeable FACE modules. These front panels can replace the standard four USB 2.0 ports with enhanced options. Options include a module with four

ethernet ports plus four USB 2.0 ports, or two full-size mini-PCIe sockets for expansion. You can also get custom-built FACE modules.

VERDICT: The Intense PC is expensive, but it's built to a very high standard and is suitable for industrial uses with customisable front panels. Its fanless design ensures quiet operation under full load. It also performs well, thanks to a dual-core Intel Core i7 processor.

	APPLE £959 inc VAT ★★★★½ **PC ADVISOR RECOMMENDED**	CHILLBLAST £549 inc VAT ★★★★☆	MSI £280 inc VAT ★★★½☆	
Product name	Mac mini	Fusion NUC	Wind Box DC110	
Processor	2.6GHz Intel Core i7-3270QM, quad-core	1.8GHz Intel Core i3-3217U, dual-core	1.1GHz Intel Celeron 847, dual-core	
CPU cooler	Custom fan	Custom Intel semi-active cooler	Custom heatsink and fan	
RAM	4GB 1,600MHz DDR3	8GB 1,333MHz DDR3	4GB 1,333MHz DDR3	
Storage	1TB Apple Fusion Drive (1TB HDD + 128GB SSD)	128GB Intel 525 Series SSD	320GB 5,400rpm HDD	
Power supply	Internal	External	40W AC adaptor	
Motherboard	Custom Intel HM77 chipset	Intel QS77 Express chipset	Intel NM70 chipset	
Operating system	OS X 10.8 Mountain Lion	Windows 8 64bit	Windows 8	
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics, DVMT	
Sound	Onboard, built-in speakers	Onboard	Onboard	
Connectivity	Dual-band 802.11a/b/g/n, gigabit ethernet, Bluetooth 4	802.11b/g/n, Bluetooth	802.11b/g/n, gigabit ethernet	
Ports	4x USB 3.0, HDMI, Thunderbolt, FireWire 800, line-in/out	3x USB 2.0, HDMI, Thunderbolt	6x USB 2.0, HDMI, VGA, S/PDIF, line-in/out, mic	
Card reader	SDXC	None	SD	
Other	Apple iLife, HDMI-to-DVI adaptor, IR sensor	Chillblast Free Software pack, Vesa mount	Office 2010 Starter, QuickSetting, Smart Media Link, MSI utilities, Norton trial	
Dimensions	197x197x26mm	117x112x39mm	192x151x35mm	
Weight	1.3kg	1kg	830g	
Warranty	1-year return-to-base	2-year collect-and-return	2-year collect-and-return	
PERFORMANCE				
PCMark 7 Overall	3,286	3,993	1,608	
Games score (fps)[1]	8/5	7/5	Fail	
Power consumption[2]	12.5W (6W OS X)/75W	9W/19.5W	10W/23.6W	

[1]Aliens vs Predator measured at 720p and 1080p, High Quality respectively [2]Measured when idle and under load respectively

PC ADVISOR TEST CENTRE

ZOTAC NANO XS AD13 PLUS

£300 inc VAT • zotac.com • tinyurl.com/cq7n7s8

Credit must be given to Zotac for creating by far the most 'mini' of any of our mini PCs. The size of this thing is ridiculous.

The Zotac's smart plastic-and-aluminium body manages to pack in far more ports and connectors than the slightly larger (but still tiny) Chillblast. Room has been found for six USB ports, two of which are USB 3.0 and one doubles as an eSATA connection.

It also includes a gigabit ethernet connector, card reader, HDMI and optical digital audio. Zotac has cheated slightly by providing 802.11n Wi-Fi via an external adaptor, but it's included in the price.

Inside the Nano XS is a dual-core 1.7GHz AMD E2-1800 processor that outperformed both the MSI Wind Box DC110 and the Sapphire Edge VS8 in our tests. That's no mean feat for a PC of this size.

However, one crucial area that has been compromised is storage: just 64GB is included, which comes in the form of an mSATA SSD card. You'll need to factor in the cost of an upgrade or external storage hardware to make the most of this system.

The bundled Windows Media Center remote control gives us a clue that Zotac is expecting many users to set up the PC as a media centre, probably storing the bulk of the multimedia content on a NAS or taking advantage of streaming services. If you must use Media Center rather than XMBC, factor in an extra £190 for Windows 8 Pro.

Build	★★★★☆
Features	★★★☆☆
Performance	★★★½☆
Value	★★★★½
Overall	★★★★☆

PC ADVISOR BEST BUY

Only 7.5W is required when idle, rising to 23.5W under full load. When hot its cooling fan becomes audible, but you'll have to push the PC rather hard for this to happen.

VERDICT: The Zotac Nano XS occupies less space than the cables you'll be plugging into it. Performance is adequate in numerical terms, but impressive when you consider the tiny dimensions. A great choice.

	SAPPHIRE £277 inc VAT ★★★★☆ **PC ADVISOR RECOMMENDED**	TINYGREEN PC £791 inc VAT ★★★★☆	ZOTAC £300 inc VAT ★★★★☆ **PC ADVISOR BEST BUY**
	Edge VS8	Intense PC Pro 8GB Win7 Pro	Nano XS AD13 Plus
	1.6GHz AMD A8-4555M, quad-core	1.7GHz Intel Core i7-3517UE, dual-core	1.7GHz AMD E2-1800, dual-core
	Custom heatsink and fan	Passive heatsink	Custom heatsink and fan
	4GB 1,333MHz DDR3	8GB 1,600MHz DDR3	2GB DDR3
	500GB 5,400rpm HDD	500GB 5,400rpm HDD	64GB mSATA SSD
	External	External	External
	AMD Hudson-3, AMD K15.1	Intel QM77 chipset	AMD Hudson-1, AMD K14
	None	Windows 7 Professional	None
	Integrated AMD Radeon HD 7600G	Intel HD Graphics 4000	Integrated AMD Radeon HD 7340
	Onboard	Onboard	Onboard
	802.11b/g/n, gigabit ethernet, Bluetooth	802.11b/g/n, 2x gigabit ethernet, Bluetooth	802.11b/g/n USB adaptor, gigabit ethernet
	2x USB 3.0, 4x USB 2.0, HDMI, Mini DisplayPort, S/PDIF, line-in/out	2x USB 3.0, 4x USB 2.0, 2x eSATA, HDMI, DisplayPort, S/PDIF, ultra-mini RS232, line-in/out	2x USB 3.0, 2x USB 2.0, 1x eSATA/USB 2.0, HDMI, S/PDIF, mic
	SD	None	SD
	HDMI, S/PDIF cables, HDMI-to-DVI adaptor, Vesa mount	None	Remote control, Vesa mount
	183x198x32mm	190x160x40mm	106x106x37mm
	660g	750g	Not specified
	2-year return-to-base	2-year return-to-base	2-year return-to-base
	1,150	2,628	1,985
	11/6	7/5	5/5
	13W/33.3W	12W/35W	7.5W/23.5W

>> How we test and our conclusion

PCMark 7 Overall (points)
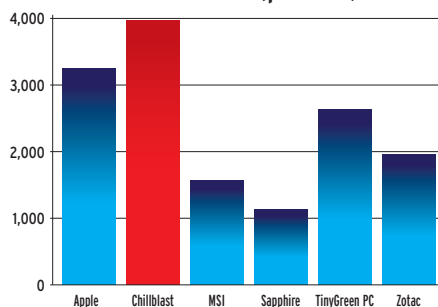
Alien Vs Predator, 720p (fps)
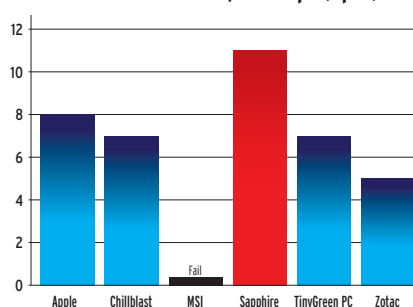
Idle power consumption (watts)

Conclusion

All the mini PCs reviewed here are small, but there are some big differences between them. Most obvious is the variation in price, and more expensive options such as the Mac mini or Chillblast Fusion NUC deliver considerably better performance. Alternatively, you could be paying for the industrial-strength build quality and interchangeable panels of the TinyGreen PC.
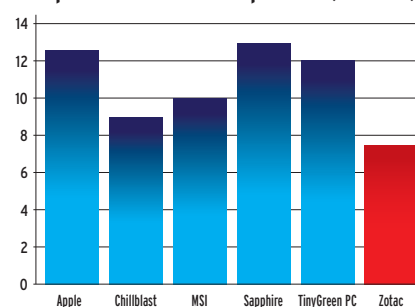
In the Mac mini's defence you could opt for a less-powerful version, which would entail you paying around half the price.

Some users won't require high performance or impeccable build, though. For casual computing, the less expensive models from MSI, Sapphire and Zotac will offer sufficient performance for tasks such as consuming multimedia, web browsing and a bit of office work. Do watch out for storage and expandability options, though.

The Zotac Nano XS will heavily rely on external storage but, if size matters, it's difficult to beat: it is considerably smaller than any of the other mini PCs in our group test, without sacrificing too much in terms of build quality or connectivity.

If you have any interest in gaming, avoid the MSI Wind Box DC110 with its inferior Celeron processor. It was unable to even begin our test game. If you won't be playing games, it's a great low-cost system that doesn't require you to install your own operating system.

For gaming, the Sapphire Edge VS8 is a clear winner, if not a substitute for a proper gaming PC. Its integrated AMD Radeon HD 7600G graphics place it well ahead of the field in gaming performance, despite it running somewhat slower in general applications. The Sapphire also has plenty of internal storage and good connectivity.

If pocket-sized performance is what you require most, Chillblast's Fusion NUC sits around the middle price-wise, but delivered superb benchmark results. The lack of USB 3.0 may be a sticking point, since fast peripherals can be connected only via Thunderbolt. Its 128GB of internal storage is fast and double that of the Zotac Nano XS, but you'll still want an external drive.

Each of these PCs is compromised in some way, whether it's by high price, low performance or limited connectivity. Which is best will come down to your specific needs.

For fully embracing the mini PC concept we have to recommend the Zotac Nano XS AD13 plus. If designer looks, leading performance and a bulletproof OS are important to you then the Mac mini is also a great choice, and available at a lower price when not in the high-end configuration we've reviewed here.

For a great all-round system with class-leading gaming performance, Sapphire's Edge VS8 is a sensible option at a decent price. It should fulfil the needs of most users, but if you have more stringent performance requirements you'll need to look elsewhere.

How we test

Application performance

Core system performance is measured using PCMark 7, an industry-recognised test suite that uses 25 workloads to measure areas such as storage, computation, image- and video manipulation, web browsing and gaming. We understand that results from this benchmark are not absolute, with Intel driver issues in Windows 8 meaning video-transcoding tests can present sub-optimal results. Nevertheless, the results give an idea of the relative performance.

A full-size desktop PC would typically score between 3,000- and 7,000 points with current hardware.

Gaming

Mini PCs aren't great for gaming, although there are some very noticeable differences in performance. We've run a single game,

Aliens vs Predator, at 720p and 1080p resolutions with high-quality settings enabled. Framerates at these settings are horribly low, but by turning down the quality settings or screen resolution you can usually achieve playable results.

No overclocking

We allow overclocking of the processor only in dedicated gaming computers. Given the low-power nature of a mini PC, overclocking simply isn't on the agenda.

Power consumption

We measure the power consumption of each PC while it's idling at the desktop and has settled down after booting up. We then measure again while pushing each PC to the limit by running Prime95 with the maximum number of available threads,

simultaneously running PCMark 7's storage sub-test. Real-world power consumption will fall somewhere between these two measurements, depending on use.

Subjective assessment

It's not all about speed. We also pay close attention to the physical characteristics of each mini PC, its noise output and build quality, and take note of important features such as the quality of components.

Warranty and support

Differences in warranty terms can affect our verdict. Obviously, longer warranties are better, but we also look at the terms and conditions – specifically, whether faulty systems must be returned to the vendor at your own cost, and whether both parts and labour are included.

PC ADVISOR TEST CENTRE

Want better sound from your laptop? We test seven speakers
that will improve music, videos and more

Contributors: David Court, Andrew Harrison, Chris Martin, Jim Martin

T he speakers built into your laptop are probably its weakest multimedia feature. Due to their tiny size, they're won't be very loud and will typically lack the ability to produce any bass. Even laptops that claim to have a subwoofer or are adorned with brand names such as Beats Audio or Dolby won't compete with even an inexpensive set of external speakers.

Depending on your needs, your main grumble with your laptop's speakers will either be volume or quality. If you want to listen to music, you're far better off with a pair of good-quality headphones, which will be able to produce a much wider range of frequencies.

When you want to broadcast sound to several people, such as when watching catch-up TV, it's often a lack of volume that's an issue.

The answer is to invest in a set of speakers that you can attach to your laptop when required. There are various things to consider when choosing speakers, and here we'll look at the main criteria.

Price is one of the main factors for most people. You can spend as little as £10 if your budget is tight, but you tend to get what you pay for and such a set may be little better than your laptop's speakers. Conversely, it's possible to spend more than your laptop cost: we've reviewed a range of speakers that caters to just about every budget.

Features
You first need to decide whether you want to use the speakers exclusively with your laptop, or would also like to connect other devices, such as a smartphone or tablet. Some laptop speakers have a USB connection, so it might not be possible to connect devices that have a standard minijack output. Other speakers merely use a USB port for power, and also connect to your laptop's headphone jack.

It's convenient to be able to wirelessly play audio from a mobile device. If that's a priority, look for a set with built-in Bluetooth. Alternatively, if you have an iDevice, consider AirPlay support.

There are two main Bluetooth standards. Stereo A2DP typically delivers MP3-like quality, so the near-lossless aptX is preferable. Note that you'll benefit from aptX's better quality only if the sending device also supports the standard.

Some speakers have more than one input. This means you can connect multiple devices at the same time, then simultaneously play music from both or quickly and easily switch between them.

Typically, these speakers have a minijack input and/or stereo phono sockets (also known as RCA). Or you may find a digital input via USB if the speakers have a built-in digital-to-analogue convertor (DAC). In the case of one speaker set here, a single USB port accepts digital audio from the laptop and powers their internal amplifier.

Another feature to consider is battery power. It's inconvenient to be tied to mains power, especially if you tend to use your laptop's battery rather than leaving it plugged in. A battery, or the ability to power the speakers via USB, means you can use the speakers outdoors or on the move.

Sound quality
Unless they're particularly large, two-box stereo speakers will be limited in volume and bass depth due to their small size. One workaround is the 2.1 system, which comprises two speakers and a separate bass speaker (often referred to as a subwoofer).

These sub-sat systems, as they're also known, require more wires and the space to place or hide the bass box, but can reward with a surprisingly full and wide-bandwidth sound.

Beware of a 'gap' that can exist in the audio reproduction – a suck-out in the high bass/lower midrange – where neither speaker unit is able to provide satisfactory coverage.

Find out what amplifier technology is used inside. The Class D module is now ubiquitous and offers great efficiency, so the speakers run cooler, weigh less and take up less space. The drawback is lower fidelity, especially at higher frequencies where the sound can get more gritty. Class AB designs are preferred for the best sound.

Whatever your requirements, we've rounded up a selection of speakers that will transform your enjoyment of music, films, TV and more.

Laptop speakers

Photography by Dominik Tomaszewski

AUDIOENGINE 2

£180 inc VAT • audioengine.org.uk • tinyurl.com/bu9nmf9

Resembling regular two-way hi-fi speakers, only scaled down to just 6in high, the Audioengine 2 speakers bear the build-quality hallmarks of serious audio components.

The left box is a self-powered speaker, which feeds the right speaker through sturdy pairs of 4mm binding posts on the back of each cabinet. You join the boxes with a short length of cable.

Inside the left speaker is a proper Class AB amplifier built around a single chip, complete with an aluminium internal heatsink that's fixed to the rear metal panel. Also on the back plate is a volume control knob, a pair of phono and one minijack line-level inputs.

These are solid-feeling little boxes, built from lacquered MDF and weighing around 1.5kg each. The mid/bass unit has a Kevlar cone, while the tweeters have 25mm fabric silk domes. To assist efficiency and bass extension, a narrow slot at the front forms a bass-reflex port.

Putting two small drivers close together within each cabinet helps stereo imaging. Sat on the desk about 60cm apart, we heard a richly detailed soundfield with good focus.

They're tonally neutral, with no undue emphasis on the midband, yet they have an almost BBC-like voicing with a slightly recessed mid-range quality. Bass is understandably limited, but what you do hear is clean and well-timed. The top end is smooth, too.

Vocals are the weak link, and lack the clarity for which we'd hope from a compact system that should major on midband storytelling.

You may not get the visceral slam of full-size speakers, but there is enough useful extension to lend the speakers some weight. You can clearly make out bass lines, without the dreaded one-note bloom.

The stereo soundstage width fell below our expectations. We listened to the speakers from various positions and noted a marked tonal shift. Raise the speakers above desk level for best results.

VERDICT: If audio quality, rather than portability, is your priority, the Audioengine 2 offers a big upgrade to any laptop speakers. They offer a neat classic hi-fi style, too, although they can stand a little too shy in the midband. **AH**

LOGITECH Z553

£109 inc VAT • logitech.com • tinyurl.com/d6Luhxw

Logitech's Z553 is a stylish 2.1 speaker system for your laptop, PC and other devices. Its quirky design reveals speakers that look as though they could fire missiles, while the subwoofer is a tall, imposing cylinder. Bright red speaker cables provide strong contrast.

The speakers sit on metal stands that allow them to tilt up or down, or you can mount them to a wall. The lengthy 2m cables offer plenty of positioning freedom.

With 10W for each satellite speaker and 20W to the subwoofer, this 40W speaker system offers plenty of volume, whether you're watching a TV show or film, playing games or listening to music.

The sound is impressive, given the price. It's best described as smooth and easy on the ears, with a nice distribution across its frequency range. Each satellite speaker has two 50mm drivers rather than a larger woofer and a smaller tweeter. This means the Z553 tops out by 17kHz, but it creates no crossover problems between mid- and high-range drivers. Treble is lacking.

We like the volume dial, which Logitech calls the 'control pod'. It has a smooth action and doesn't shift the volume too quickly. There's also a dial for bass level on the tube's rear, and a headphone jack for when you don't want to disturb those around you.

The subwoofer volume can also be adjusted to suit your taste via a small dial on the back of the control pod. The 4in down-facing driver delivers a well-rounded sound, but the tall-tube design means certain low notes are exaggerated.

Many laptop speakers have only a 3.5mm jack input, but the Z553 also has stereo phono inputs on the bass speaker, and a second jack input on the control pod. This means you can connect multiple devices. Bluetooth connectivity is not supported, but Logitech sells an accessory that adds this functionality for £35.

VERDICT: We like the well-rounded and powerful audio performance of the Z553. While the look and sound may not suit all tastes, and are not designed for portability, they are well built. Multiple inputs and a control pod make the Z553 a great sound system for your home. **CM**

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

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

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

PC ADVISOR
BEST BUY

OTONE AUDIO ECLIPSE 2.1

£49 inc VAT • otoneaudio.co.uk • tinyurl.com/c4bssw4

Otone's Eclipse speakers are eye-catching, but don't be fooled into thinking this set is all beauty and no brains: these speakers get a lot of things right, and at a very attractive price.

The aesthetics are not for everyone. If you're looking for an understated set of laptop speakers that will complement your home or office furnishings then the Otone Audio Eclipse isn't for you. However, if you can get past those lurid lime accents, you can get surprisingly tuneful audio hardware for less than £50.

The two satellites have 2in drivers, while the separate bass box has a single 4in speaker; these are powered by amplifiers in the bass box, which is rated at 10W per channel, plus 20W for the woofer.

This 2.1 system has enough power to fill a small room – a feat that the smallest laptop speakers simply can't achieve.

During our testing, we found that the Eclipse 2.1 set was confident and carried through well, making you aware of its presence. Treble cuts through conspicuously, but relatively clearly, and vocals sound pleasantly relaxed. With the main speakers set two laptop-widths apart, we heard an airy and spacious sound, which blended smoothly enough with the bass. And the lower notes timed well, with just a hint of the kind of slam required to make music more believable.

The audio and power leads that stretch to each speaker are sufficiently long to create decent stereo separation. We also like the tiny old-school volume dial, which is rarely found on PC speakers.

The Otone Audio Eclipse speakers punch well above their weight in terms of sound quality at this low price. If you're looking for a set of speakers that sound better than your laptop's and have plenty of oomph then you could do a lot worse than these. If you can overlook the garish green highlights, that is.

VERDICT: You will struggle find to a set of speakers at this price that produce better all-round sound than the Otone Audio Eclipse. If you don't mind how your speakers look, you won't be disappointed with their sound quality. **DC**

Build	★★★☆☆
Features	★★★☆☆
Performance	★★½☆☆
Value	★★★☆☆
Overall	★★★☆☆

PALO ALTO MUSIK

£50 inc VAT • paloaltoaudio.com • tinyurl.com/d39cm4o

Palo Alto's white-and-silver Musik speaker set is designed to complement Apple's MacBook line-up, but it works just as well with any Windows laptop.

Although it's evident from some of the other models in our group test that £50 isn't an awful lot of money where laptop speakers are concerned, we expected better from this set – especially given that Palo Alto claims it offers "crystal-clear sound".

The Musik speakers' power falls a long way short of the mark when turned up to max volume. This is primarily because they draw their power and audio input from a single USB port.

Although this means they are easily portable, enabling you to carry them in your laptop bag and plug them in whenever and wherever you need them, their reliance on a low-voltage USB port compromises their power capability.

Since they also use a digital connection, rather than the analogue minijack favoured by most laptop speakers, the Palo Altos have a built-in digital-to-analogue converter. The company believes this offers higher quality than your laptop's DAC, making the sound you hear noiseless and bit-perfect.

Unfortunately, the speakers offered underwhelming performance in our tests. When listening to our favourite tracks, vocals and other mid-range sounds lacked body, and what bass we heard was uninspiring. Treble came through a bit louder and clearer, but this led to an unbalanced sound that wasn't pleasing to the ears.

If you want a set of speakers for listening to music at home then you'll get a lot more for your money elsewhere. However, if you're looking for an affordable and portable pair of speakers simply to catch up with EastEnders while you're on the road, the Musik speakers make a little more sense.

VERDICT: The Palo Alto Musik speakers are designed with convenience and portability in mind, but audio quality has been sacrificed. They are suitable only for those looking to give their laptop a decibel boost on the move, and should be avoided if quality audio is concerned. **DC**

Build ★★★☆☆
Features ★★★½☆
Performance ★★½☆☆
Value ★★★☆☆
Overall ★★★☆☆

RAZER FEROX

£54 inc VAT • razerzone.com • tinyurl.com/cpmcgr5

The Razer Ferox speakers are designed to be portable, but to still pack a punch. These pop-up speakers offer 360-degree sound.

Single 30mm drivers in each unit are driven by 3W amplifiers, giving better sound than that produced by any built-in laptop speakers. Despite their small size, they can deliver a decent volume. There's no dedicated volume dial, and this is controlled within Windows or on a device connected via the standard minijack output.

Although the Ferox speakers are a step up from tinny laptop speakers, the sound isn't amazing. The mid-range is prominent, which produces clear vocals, but the high frequencies are withdrawn.

Unfortunately, so is bass. Razer says the Ferox's lowest frequency is 150Hz. We found them better suited to watching TV content than listening to music.

A spring-loaded mechanism allows the speakers to hide away inside the unit and pop up when required.

Each speaker unit has a 30mm driver, which points skywards. An inverted cone sits just above, causing the sound to be reflected in all directions, creating an omni-directional sound field.

With the speakers placed either side of a laptop you get regular stereo sound, but their clever design means you can place them anywhere. This makes them ideal for (quiet) parties and other situations in which there are multiple listeners.

The real advantage of these speakers is that they are extremely portable. Each Ferox fits in the palm of your hand and weighs just over 200g. A supplied carry case holds the speakers and cable.

Not only are they portable, but the speakers are battery powered and charge via USB. The battery takes three hours to charge and provides up to 12 hours of playback. That ought to be enough to get a day or two's use between charges.

Each speaker unit has an LED ring around the bottom. When this is lit constant blue the speakers are fully charged, while flashing blue means they are charging. A red ring warns you that the remaining battery level is below 10 percent.

VERDICT: With a compact and lightweight design, the Razer Ferox speakers are easily portable. Their 360-degree soundscape also makes them ideal for use by multiple listeners. However, they're overpriced, given their mediocre audio quality. **CM**

Build ★★★★½
Features ★★★★☆
Performance ★★★★½
Value ★★★½☆
Overall ★★★★½

PC ADVISOR
RECOMMENDED

SOUNDMATTERS FOXL V2

£169 inc VAT • soundmatters.com • tinyurl.com/czsj7r8

Don't confuse the Soundmatters FoxL v2 with the usual cheap tat billed as portable wireless speakers: this solid-feeling black bar, just 140mm long, beautifully reproduces music.

Most little plastic PC speakers are light in weight and even lighter in sound quality, yet the FoxL exudes class, in both its feel and its sound reproduction. At 269g, it's strangely heavy. Inside is a 4W stereo Class D amplifier, two innovative woofer-cum-tweeter drivers (a 'twoofer') and a lithium battery that doubles as a bass speaker.

A hinged stand allows the FoxL to sit at a good angle on the table. Behind this is the rectangular battery pack, suspended on a rubber diaphragm and acting as a passive bass radiator. The 'twoofers' face forward and stand proud of the main chassis as two spherical domes.

You can connect the FoxL through a regular 3.5mm minijack socket, or via Bluetooth A2DP. The latest version is said to support aptX, a near-lossless audio codec.

Over a wired link the FoxL gave an uncannily fulsome and rich sound. Held in the hand, you can feel the device's palpable vibration as its battery gets excited. Set down and playing music, upright bass had real texture, heard in the prelude and riff of Miles Davis' 'So What?'. Trumpet and piano sat neatly over, cleanly projected into the room. Vocals were also flattered by the speaker, maintaining great diction and highly intelligible.

With speaker drivers around only 100mm apart we can't expect super stereo, but the FoxL can nevertheless conjure up a large soundfield. As you move your listening position the tonal quality remains strangely constant, a great asset.

The volume level can be exceptional, given the size. Powered from the internal battery, Soundmatters specifies the amp at 2W per channel. With the help of the Mini-USB charger connected, it stretches to 4W, and you can actually hear the extra few decibels of sound pressure available. Played flat-out, we never heard clipping or driver bottoming, suggesting there may be some crafty limiting to prevent damage to your senses or the device itself.

VERDICT: We've heard many small PC and gadget speakers before, but nothing that has come close to the sonic realism of the FoxL v2. Expensive, yes, but with a real quality advantage over anything else around the same size. **AH**

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PC ADVISOR

Online • **Print** • **Mobile** • **Digital**

WOWEE ONE SLIM

£80 inc VAT • woweeone.com • tinyurl.com/cktnydL

If you're after a portable speaker for your laptop, smartphone or tablet you could do a lot worse than the Wowee One. It's a little smaller than an iPhone 4S, and twice as thick.

It has a built-in battery that lasts around 10 hours and charges via USB. An LED shines green when less than 10 percent remains.

Audio input is via a standard minijack, and plugging in a cable turns the unit on. Unplugging this cable turns off the speaker, so you don't need to worry about accidentally draining the battery.

Available in white or black, the Wowee One Slim has a traditional upward-facing cone speaker, and an unusual Gel Audio driver below.

The 2W speaker sounds rather tinny and is lacking in bass, although its volume will be an improvement on built-in speakers.

However, press the gel driver firmly on to a suitable surface and it will turn into a speaker that can produce bass frequencies.

We tested the Wowee One on many different surfaces, and the results varied from no improvement to stunning bass that eclipsed any other portable speaker we've tested.

The best results came from a pine wardrobe, which acted much like a traditional speaker cabinet and resonated with amazing bass, adding a huge amount of depth and presence to music.

Build	★★★★☆
Features	★★★½☆
Performance	★★★★☆
Value	★★★½☆
Overall	★★★★☆

For vertical surfaces such as windows you can buy a set of gel pads: semi-permanent sticky pads that hold in place the speaker. There's also an optional hard case, which costs £10.

VERDICT: If you can find the right surface, the Wowee One Slim produces excellent quality. If not, you can be stuck with laptop-like audio. Because quality is dependent on the objects around you, we can't recommend it unreservedly. **JM**

	AUDIOENGINE £180 inc VAT ★★★½☆	LOGITECH £109 inc VAT ★★★★☆	OTONE £49 inc VAT ★★★★½ PC ADVISOR BEST BUY	
Model	Audioengine 2	Z553	Eclipse 2.1	
Product code	A2W	980-000650	N/A	
System type	Stereo desktop speakers	2.1 desktop speakers	2.1 desktop speakers	
Drivers	2x 65mm Kevlar mid/bass, 2x 20mm silk dome tweeters	4x 50mm drivers, 1x 100mm subwoofer	2x 50mm drivers, 1x 100mm subwoofer	
Amplifier type	Stereo Class AB	Stereo Class D	Stereo Class D	
Power rating (manufacturer)	15W rms per channel	10W rms per channel, 20W rms sub	10W rms per channel, 20W rms sub	
Frequency response (manufacturer)	65Hz–22kHz	55Hz-17kHz	70Hz-20kHz	
Integrated DAC	No	No	No	
Inputs	1x stereo RCA phono, 1x 3.5mm stereo minijack	1x stereo RCA phono, 2x 3.5mm stereo minijack	1x 3.5mm stereo minijack	
Finish options	Satin black, gloss white	Black	Black	
Extra features	Magnetically shielded, auto power off	Volume dial with headphone jack	None	
Power supply	External 17.5V/1.8A	Internal 230V/550mA	Internal 230V/1A	
Dimensions	105x158x138mm	90x160x137mm; sub: 381x160mm diameter	82x172x59mm; sub: 190x160x190mm	
Total weight	3kg	998g	2.6kg	

Conclusion

The best speakers for you will depend on your priorities. We've tested a variety of types of speaker system, all of which will give you better sound quality that your laptop's speakers.

For those who want something compact that can also be used to listen to audio from other mobile devices, there are several choices. If money is no object, the Soundmatters FoxL v2 is a wise choice. It's small enough to carry everywhere, runs on battery power and offers surprisingly good sound quality, given the size. It also has Bluetooth so you don't need a cable to connect your laptop.

A much cheaper alternative is the Wowee One Slim. It's similarly portable, and can provide jaw-dropping bass.

For those who'd prefer a more traditional speaker set that connects to the mains, Otone's Eclipse 2.1 set offers great value. Thanks to a separate bass speaker, bass is much more powerful than those sets without one. There's also considerably more volume on offer, which you'll appreciate if you want room-filling sound. The design may put some off, but for sheer all-round value, the Eclipse 2.1 is our Best Buy.

Logitech's Z553 set is worth a mention: it's more than twice the price, but offers multiple inputs and produces slightly better sound quality. It also looks more refined and can be upgraded via the optional Bluetooth module. ⊠

PALO ALTO £50 inc VAT ★★★☆☆	RAZER £54 inc VAT ★★★☆☆	SOUNDMATTERS £169 inc VAT ★★★★½ PC ADVISOR RECOMMENDED	WOWEE £80 inc VAT ★★★★☆
Musik Digital Multimedia Speakers	Ferox	FoxL v2	One Slim
SA110B	RZ05-00500100-R3	1P1000099	5060212780218
Stereo desktop speakers	Portable stereo speakers	Portable stereo speaker	Portable mono speaker
2x 50mm drivers	2x 30mm drivers	2x 25mm 'twoofer', 1x passive BassBattery	1x 30mm driver, 1x Gel Audio driver
Stereo Class D	Stereo Class D	Stereo Class D	Not stated
Not stated	3W rms per channel	4W rms per channel	Not stated
Not stated	150Hz–20kHz	80Hz–20kHz	40Hz–20kHz
Yes	No	No	No
USB	1x 3.5mm	1x 3.5mm stereo minijack	1x 3.5mm stereo minijack
White, silver	Black	Black	White, silver
USB powered	USB chargable, 12 hour playback on battery	Bluetooth 2.0 A2DP with aptX	None
USB 5V	470mAh battery	Internal lithium-ion battery, external 5V/2A charger	Internal lithium-ion battery
89x76x165mm	70x70x64mm	143x55x35mm	55x105x17mm
1.13kg	220g	269g	121g

WINDOWS 8

VS

OS X

MOUNTAIN LION

Martyn Casserly compares Microsoft Windows 8 and Apple OS X 10.8 Mountain Lion to discover how the two operating systems stack up against each other

With such a radical departure from the Windows format we've used for the 17-odd years since Windows 95 launched, we thought it was time to take stock and see how Windows 8 compares with Apple's OS X Mountain Lion – and find out whether it's time to switch.

In releasing Windows 8, Microsoft has taken a huge step toward a unified OS experience across PCs, laptops, tablets and smartphones. Where once small icons and a Start menu populated the Windows desktop, the simplified Modern user interface, replete with live tiles and designed to be controlled with touch gestures, is proving an unfamiliar and often confusing new landscape.

Improvements behind the scenes are noticeable, but redesigning the way users interact with their machines was always going to be difficult. Don't forget, though, that the traditional desktop remains, albeit without a Start menu.

Response to Windows 8 has been mixed. Microsoft claims to have sold 60 million copies. However, there has also been negative press about the frustrating learning curve required by Windows 8's Modern interface, plus reports of customers (particularly businesses) exercising their right to downgrade to Windows 7 when buying new machines.

One of the problems Windows 8 has faced is its customers' ability to operate the touch-friendly OS using a keyboard and mouse. It's certainly possible to use the Modern UI this way, but it can take more clicks to accomplish a task in Windows 8 than in previous versions.

We're now seeing desktop and laptop PCs manufactured with the Modern UI in mind. These devices feature touchscreens, gesture-supporting touchpads, and even some unusual convertible designs that enable laptops to transform into tablets (see our group test on page 54). Finally, it's possible to experience Windows 8 as Microsoft intended.

Since it isn't possible to run older applications in the Modern UI, Microsoft has been forced to retain the traditional desktop environment, making Windows 8 an operating system of two halves. In this feature we compare both sides of Windows 8 against Mountain Lion.

We compare the two OSes in their out-of-the-box condition, with no third-party browsers, email clients, photo managers, or any other software installed.

We've tested Windows 8 using Lenovo's Yoga 13, an ultraportable laptop with a 13in screen that can be turned 360 degrees and folded flat against the keyboard to form a tablet. For OS X we've used a 13in Apple Macbook Air.

We'll look at every facet from the obvious interface design to the bundled apps, security, file sharing and more.

Windows 8 has been out in the wild for five months now, had its preliminary patches applied, and seen the introductory £15 upgrade offer consigned to history. Now things get serious: so it's Microsoft vs Apple, Windows 8 vs OS X Mountain Lion. Read on to find out how two different design concepts stand up to the mundane reality of everyday computing.

INTERFACE DESIGN

APPEARANCE

WINDOWS 8

Let's start with the new Modern UI. There's no doubt that this represents one of the boldest moves made by Microsoft in Windows' history, and each new Windows device proudly displays the colourful and dynamic design.

The Start screen, which replaces the old Start Menu, is an interesting environment. Large boxes form a multicoloured grid that sits on top of a customisable background. Several tiles are live, frequently updating themselves to reveal the latest sports news, search trends on Bing, weather in your location, or news headlines. The desktop app tile displays the wallpaper in use on the traditional Windows desktop.

The use of images to accompany the constantly changing news makes the Start screen experience seem alive and interesting, almost to the point of distraction. Leaving open this Start screen while perusing a document on a second screen can be a hazardous affair: your eye will invariably be drawn to the flashing and flickering of transfer rumours, or the startling news that dolphins are one of the most searched-for terms on the internet today.

For the more organised user, there's the option to group the icons in columns. This is achieved by dragging them into a new grid, then using the pinch gesture (or mouse's scrollwheel) to zoom out, clicking on the column and then naming it.

Selecting any one of these icons causes it to expand, flip over and launch the app.

This introduces another significant change to the Windows experience: the full-screen app. When using the traditional desktop you can resize individual panes to suit your preference and available screen space. But in the Modern UI, full-screen apps are the order of the day.

The one concession is a 'snapping' feature that allows you to stretch an app over three quarters of the screen, with another app squeezed into the remaining quarter. For Twitter feeds and other list-based apps this can work well, but if you want to run anything more complicated then you'll need to invest in a second monitor or develop a deep kinship with the Windows, Tab shortcut.

This is where the tablet-like nature of the new design begins to rear its head, and may cause those who have grown up using Windows some confusion. Many of the Modern UI apps also have simplified layouts and functionalities (we'll cover this in more depth later). Even the symbols for loading or processing have been tweaked,

with users now watching five little balls orbit around an invisible sun, or a coloured line advancing across the top of the screen until the job has been completed.

Windows 8 looks like a modern OS. When you consider its clean lines and the expanses of empty white space often found onscreen, it seems oddly similar to Google's most recent version of Android, mixed with a dash of Apple's traditional minimalism.

The Modern UI is a stark departure from the traditional desktop, which you'll still use to run legacy applications such as Microsoft Office, Photoshop and your web browser – for the time being, in any case.

On the desktop you can run programs written for Windows 7, Vista or XP, and navigation is largely the same as in previous versions. However, you might want to change several default application settings to prevent situations where you click on, say, an image file on the desktop, and are transported to the Modern UI's Photos app to view and/or edit it. Some people might not mind this switching about, while others will find it grating. We'll explain all later in this feature.

These are all set-and-forget fixes, but during your first few hours in the new environment you may well feel a bit lost – especially if you're not confident when it comes to altering Windows' settings.

Arguably the most frustrating element is that Modern UI apps don't have buttons that allow you to hide or close the window; instead, you drag your finger (or mouse cursor) down from the top of the screen to exit the app, or swipe in from the left side to switch between apps.

If you don't have a touchscreen then pressing Windows, Tab lets you navigate between open Modern UI apps, and Alt, Tab

will cycle through everything. Those who prefer to use their mouse for everything will quickly discover the screen's new 'hot' corners: put the cursor in either left corner to display a list of running apps, or the right corners to bring up the Charms bar.

OS X

OS X 10.8 is a windowing OS and much more like Windows 7 than Windows 8, so it's not as difficult as you might expect to switch from XP, Vista or Windows 7.

The latest version is called Mountain Lion, with previous iterations also named after big cats. Instead of fancy new graphics or unified layouts, Mountain Lion instead gets a carefully administered sheen of polish, with some useful features that make your life that bit easier.

By default the OS X desktop is empty, with a dock at the bottom of the screen providing shortcuts to the various programs you can launch. You can achieve a similar look in either Windows 7 or 8 by pinning shortcuts to the taskbar.

Icons are magnified as you move the mouse cursor over the dock, which you'll either find helpful or annoying. This action is disabled by default. The dock can also hide itself away when not in use.

Apple's approach to minimising and maximising Windows has always been a tad confusing. Clicking the green + button (zoom) can sometimes mean the window increases to fill the screen (while retaining the menu bars at the top); on other occasions it fills only the height of the screen.

Since the release of OS X Lion, Apple has also included in many of its apps a full-screen button. This not only expands the window in question, but removes the top menu to utilise the entire screen. So, while Apple was first to approach the concept of full-screen apps, Windows was first to make them mandatory.
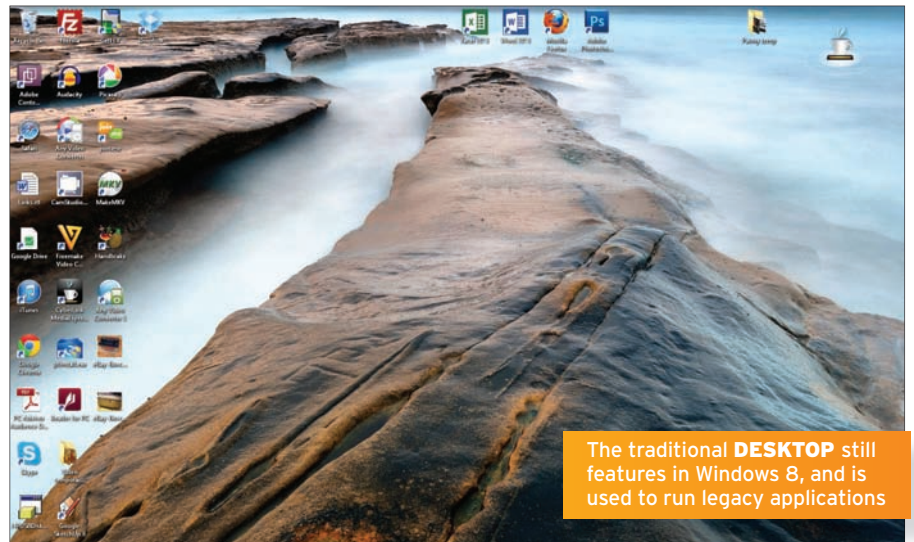
NAVIGATION

WINDOWS 8

The visual redesign of Windows 8 is striking, but it's nothing compared to the overhaul that has taken place in terms of how the user navigates their way around the system. It's in this respect that the two operating systems are most notably different.

In Mountain Lion the multitouch trackpad can become the fulcrum of the entire user experience, while Microsoft has decided that

in Windows 8 the touchscreen should be the primary control – at least when you're navigating the Modern UI.

As you might imagine, this dictates many of the decisions developers have to make in regard to app performance and hardware design. This became clear to us when we

The traditional **DESKTOP** still features in Windows 8, and is used to run legacy applications

MISSION CONTROL lets you see all open windows in all open apps

were considering which machines to use for this feature. OS X controls behave in the same way across the current Apple line-up, but choosing a Windows machine gave us a few headaches. We chose the Lenovo Yoga 13 because it offers a full Windows 8 desktop experience, and can be converted to a tablet by simply flipping the screen and folding it against the keyboard.

However, the larger choice of Windows hardware, which highlights Microsoft's desire

to have a unified OS for every type of device, can be confusing. We've already heard stories of customers buying Windows RT tablets that looked the same as Windows 8 devices, only to find that none of their existing software could be installed or even downloaded from the poorly stocked app store.

As Windows 8 and the Windows Store mature we hope to see many well-known programs migrate to the Modern UI without compromising their functionality. For now, though, it feels as though Windows 8 is optimised for hardware that isn't ready to fulfil the OS' vision for the future.

It's interesting to note that although Apple leads the market in consumer touchscreen technology with its iPad and iPhone, it has kept separate OS X and iOS.

Many of Windows 8's touchscreen features make complete sense. Swiping left to right moves the various Modern UI apps in the relevant direction, and pressing any part of the screen has the reaction you would expect from a tablet: options are chosen, text boxes are activated, Angry Birds are catapulted. From the Start screen it's easy to move around and select an application to launch.

As we've already mentioned, it's perfectly possible to use a mouse to achieve most of the things you can with a touchscreen, but it can take a while to get used to the left/right scrolling. For the most part the mouse's scrollwheel will automatically scroll left and right when this is all you can do, although you might have to first click to 'focus' the mouse on the scrollbar.

A significant portion of users are now familiar with the way mobile phones or tablets work, and therefore expect certain things to happen in a touch environment. For example, dragging down from the top of the screen in Android lets you read and interact with notifications; in Windows 8 this action will either close an app or bring up contextual options. (Right-clicking onscreen achieves the same effect.)

Once these options are on display how you get rid of them can be baffling. If you swipe in from either the top or bottom of the Mail app you get the aforementioned contextual menu, but removing it requires you to repeat rather than reverse the action. You can tap anywhere on the screen to get rid of the menu, but if you move your finger while doing so you'll simply scroll through the contents of the page instead. These are minor points, but they crop up more often that you might expect and quickly become irritating.

Swiping in from the right of the screen reveals the Charms bar, which is a useful link to the various settings on the PC. Somewhat confusingly, to dismiss this menu you reverse the action, which is inconsistent with the vertical gestures. Menus also fail to appear if you move too quickly, or your fingers are too light on the screen, which can become an issue when you're working at a steady rate, but find yourself tripping over the menus while hurrying to the next task.

There are also movements that don't work the way you expect them to. When swiping in from the left you switch to the next open application. No problem there, but if you want to return to the previous app you can't reverse the motion. Instead you need to cycle through all open apps, or quickly swipe right then left to open up a list of the available

programs. It's not the end of the world, and the Alt, Tab option is still available, but it's just another thing you have to remember when using Windows 8.

Using the touchscreen can be fun, especially when browsing websites that have lots of links to click on. We've no doubt that users will in time adapt to the quirks of Windows 8's design, but the learning curve can feel obstructive at first.
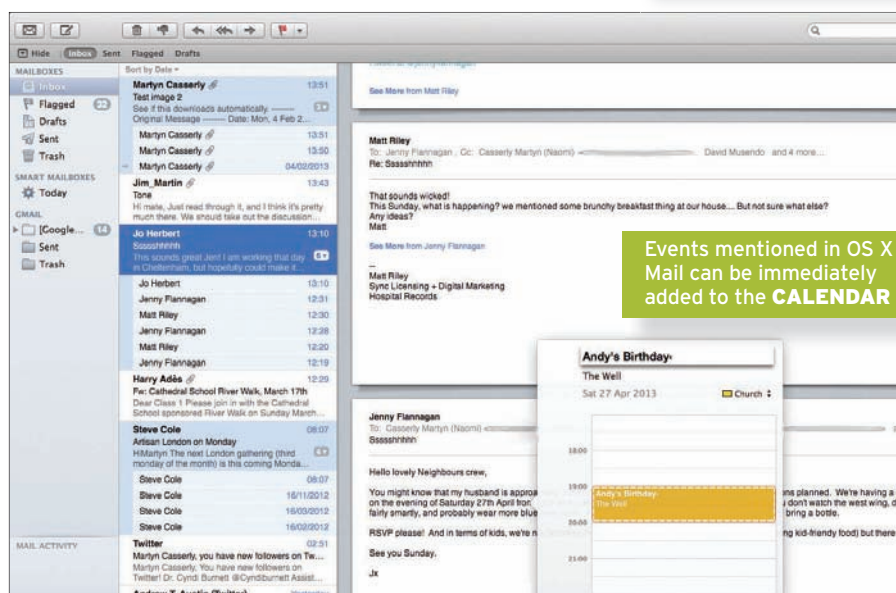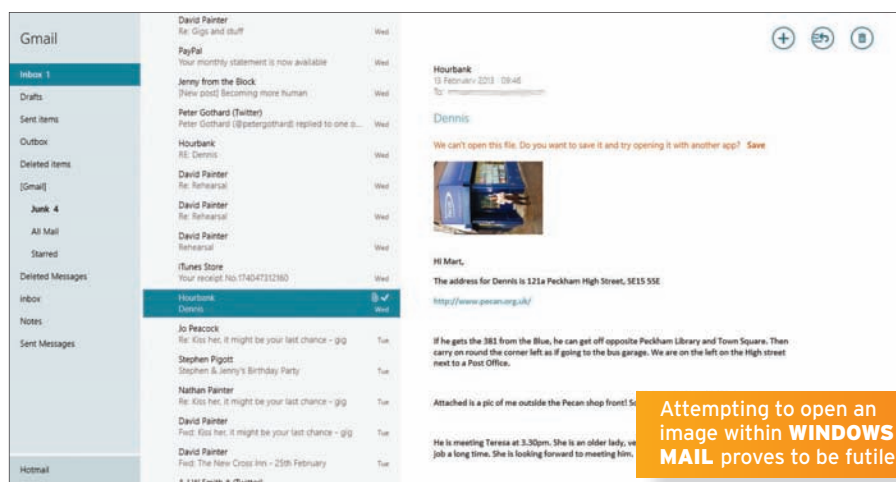
OS X

Apple has honed to a very impressive degree OS X's touch interface. As many a user's fingers are already well versed in the language of trackpads, it requires no great leap of knowledge to find that two fingers scroll the page. You can reverse the direction.

So adjusting to pushing four fingers up to reveal the open applications, pinching

five fingers inward to open the Launchpad screen (which holds icons for every program installed), and swiping three fingers left or right to move through different virtual desktops is a short jump that's easy to master in minutes.

All OS X's gesture commands are speedy to complete and become second nature in no time. Some applications also allow the screen contents to be rotated by moving two fingers in a circular motion.

It's obvious that Apple has learned a great deal from the development of the iPhone and iPad and their control systems. This pays dividends in Mountain Lion; rather than bewildering you with variety, navigation makes a good deal of sense and remains consistent throughout the OS. It means Mountain Lion is a much friendlier environment than Windows 8 to someone who is sitting down to use it for the first time.

Attempting to open an image within **WINDOWS MAIL** proves to be futile

Events mentioned in OS X Mail can be immediately added to the **CALENDAR**

Windows 8's **PHOTOS** app sucks in photos from your hard drive, Facebook, Flickr, SkyDrive, OneNote and even your phone

BUNDLED APPS

EMAIL

One of the first things you'll set up when moving to a new computer is your email account. Both Windows 8 and OS X request that you create an ID during setup that will enable them to automatically configure the relevant applications.

This doesn't tie you to a Microsoft or Apple email account – both operating systems allow you to also use Gmail, Yahoo or whatever provider you like – but it does afford you access to other parts of the wider ecosystem. One notable exception to the 'other providers' rule is that Windows 8's Mail app doesn't support POP3 accounts. There aren't many services that operate solely in this format, but if yours does then Windows 8's Mail app won't be much use.

In use, the two Mail apps are very different beasts. The OS X version is powerful and offers functions such as Smart Mailboxes, which filter content by parameters set by the user. You can also mark different email addresses as VIPs, and these are separated from the general pack and more easily seen in the sea of email.
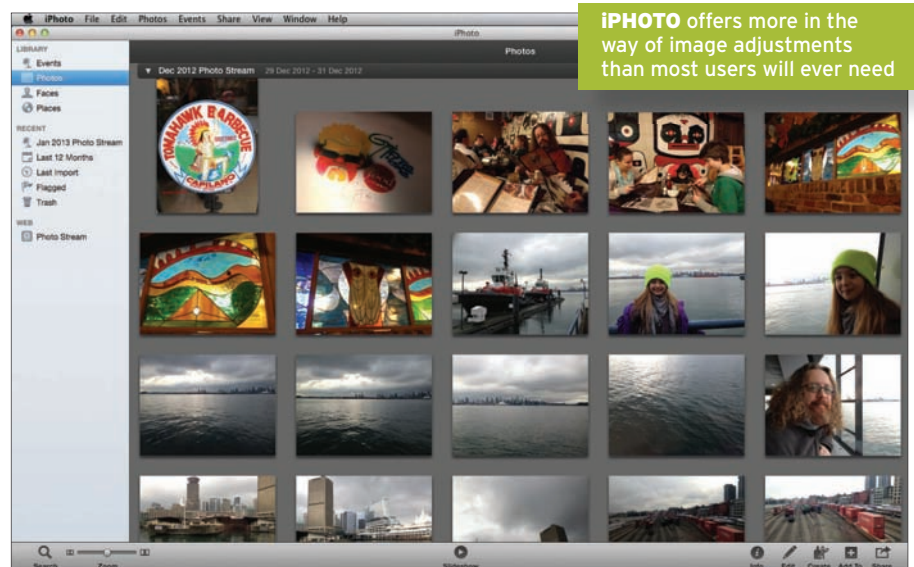
The various menus offer a high degree of control over the behaviour of your mail, and the unified inbox seamlessly draws together all your correspondence from various accounts.

Conversation threads are neatly grouped, text is intelligently examined so that events mentioned in emails can immediately be added to your calendar ('lunch at 12pm tomorrow', for example), and contacts can be added in a similar fashion.

The design of the app itself is a little bland and industrial-looking, with barely any colour and a blockish three-column layout. As the environment gradually becomes a sea of grey it can feel rather stark. Even the icons eschew decoration.

By contrast the Windows 8 Mail app is pretty. There still isn't much in the way of colour, but the use of fewer hard lines gives the app a softer, more elegant appearance that is very much in keeping with several other Windows 8 apps.

Unfortunately, Windows 8's Mail app doesn't have the brains to go with its beauty. For sending and receiving emails it functions perfectly well, but if you want to create groups, filter messages by flagging, have a unified inbox for all your accounts, or do anything remotely intelligent then you'll be frustrated: none of this is possible.

Mail struggles with images, too, failing to automatically download them even when you select that option in the settings. And you can't view a large version of the thumbnail unless you save it to the hard disk and access it from the Photo app.

Attempting to use the Open With option increases the sense of futility (it doesn't work). We wonder whether this basic approach is a ploy by Microsoft to steer users toward Outlook.com, which is powerful and far more like the classic Outlook experience many people expect from Microsoft Mail.

PHOTOS

If there's one situation in which using an application in full-screen mode makes the most sense then it's when photographs are involved. The Windows 8 Photos app takes advantage of this with an image-heavy layout that sucks in pictures from your hard disk alongside (if you allow it the necessary permissions) Facebook, Flickr, SkyDrive, OneNote and, provided you have the SkyDrive app installed, even your smartphone.

Albums are displayed in a strip format, and you can swap the background image for one of your choosing. Navigating this app is very easy with a touchscreen, and for the most part it feels and behaves like a tablet app. You can also share images with friends, but unless you link your contacts to Facebook or Twitter, which can make them somewhat unwieldy if you have a lot of online friends, this is an email (or SkyDrive) only affair.

The app is merely a viewer, and to edit images you'll need to switch to the desktop environment, browse to the image in File

iPHOTO offers more in the way of image adjustments than most users will ever need

Explorer, then click Edit in the Ribbon menu at the top of the window.

This will launch Paint, a desktop application as ill-suited to editing photos as chocolate is for making teapots. Paint remains very similar to its implementation in Windows 95, with very basic tools that are barely any use for enhancing photos. It's a far cry from even the simplest photo-editing apps available to most smartphones and tablets these days. It's a missed opportunity, but if all you want to do is look at your pictures then Photos is a fine way to do it.

In Mountain Lion the Preview app is the default viewer for Jpeg image files (among others), and it includes some powerful editing tools that let you adjust colour, size and rotation. It also lets you annotate images, check their Exif data and create contact sheets.

One of the standout features of OS X has always been the iLife suite of apps that comes with every Mac. iTunes will be familiar to most Windows users, Garageband is an excellent audio-creation studio, and iPhoto is Apple's photo-management and -editing program.

iPhoto is a great app that sorts into date order your various pictures and allows you to apply a decent level of effects and corrections to your images. You can retouch blemishes, crop, straighten, fix red-eye, use a combination of filters, and even delve into the histogram to adjust exposure levels and a good deal more. iPhoto doesn't allow advanced Photoshop-style manipulation such as layers, but for the majority of users there is more here than you'll ever need, and it's certainly a world away from Windows' poor offering.

CONTACTS

Windows 8's People app is easy on the eyes, with a list that scrolls left to right through your various contacts in Hotmail, Outlook, Google or social-media sites, depending on which accounts you connect.

You can easily create new contacts in the app, but images aren't an option. Searching is easy, and you simply begin typing to bring up the search bar. Connecting your Facebook contacts also brings in your friends' status updates and any photos they upload. This can be useful, letting you immediately see what someone's been up to recently.

Apple's Contacts app is in keeping with the overall business feel of Mountain Lion, styled as a traditional leather contacts book. It offers impressive functionally, with plenty of detailed fields: iCloud integration so you're always backed up and can access the information from almost anywhere; very clever blending of Facebook and normal contacts so that duplicates are merged together to form one contact without changing the original data; and the ability to create groups in a number of ways.

OS X's **CONTACTS** app is styled like a traditional leather address book

VIDEOS

You might think that playing a DVD would be straightforward on any computer, but it poses a big problem for our two computers. On the Apple side it's simply a matter of hardware, as the MacBook Air doesn't have a DVD drive (the current MacBook Pro does, though). You could buy a USB DVD drive fo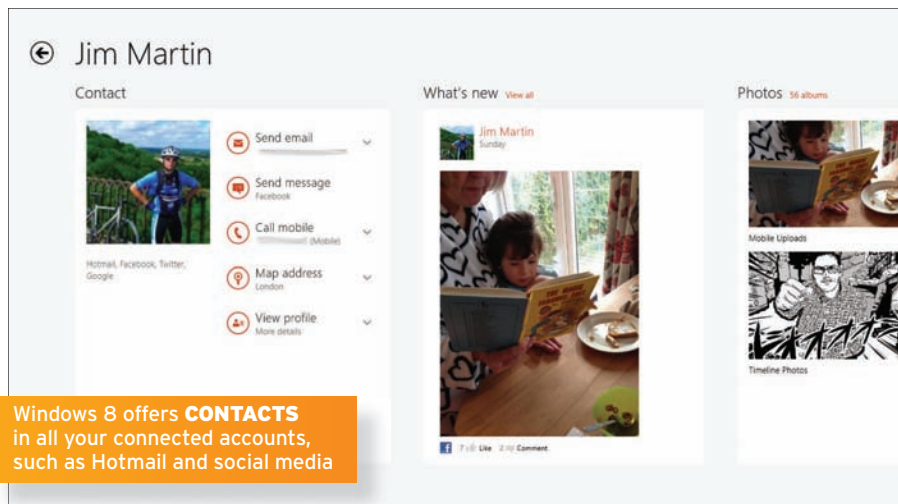r the Air, of course. Apple is clearly trying to steer people toward the iTunes store for movies, but this doesn't help those who already own a large collection of physical media. Playing DVDs is simple using the built-in DVD Player app, which can play optical discs or ripped VIDEO_TS content.
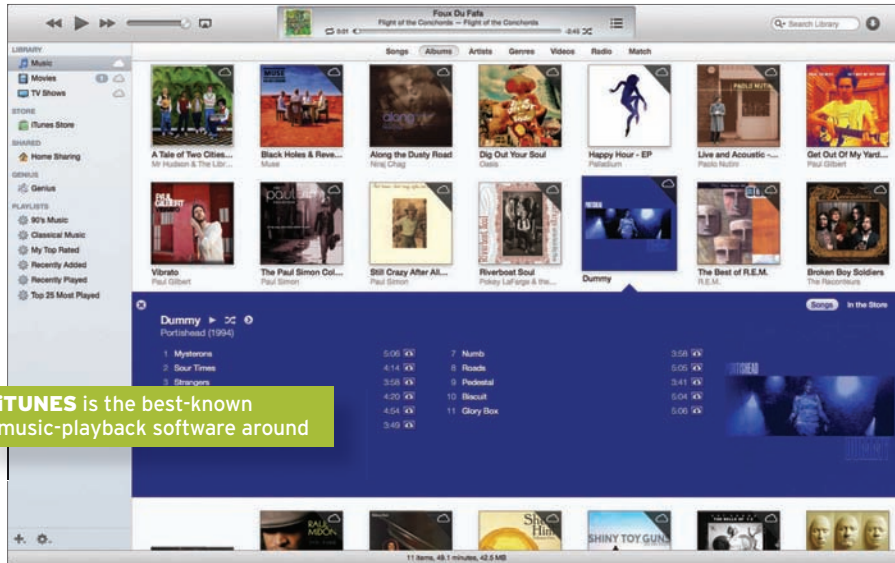
On the Windows side the Yoga 13 also lacks an optical drive, but many Windows 8 laptops still have them. Whether those devices can play a DVD movie all depends on which version of Windows 8 they're running and whether the manufacturer has bundled an app that can play DVD movies.

Windows 8, which is aimed at home users, doesn't come with Windows Media Center installed, nor the codecs necessary to watch DVDs. Windows 8 Pro users can buy the Media Center Pack for £6.99, which allows you to play DVDs and watch and record TV with Windows Media Center. If you have plain Windows 8, you have to pay £100 to upgrade to the Windows 8 Pro Pack.

Third-party apps, including the excellent free VLC player, will let you play DVD movies without spending any extra, but it doesn't make for a good out-of-the-box experience. If you have digital versions of your movies, such as Mpeg4 files, then both systems will happily play them in the Xbox Video or QuickTime apps.

Windows 8 offers **CONTACTS** in all your connected accounts, such as Hotmail and social media

iTUNES is the best-known music-playback software around

MUSIC

iTunes is probably the best-known music-playback software around. Thanks to the success of the iPod, many have spent hours ripping CDs and creating playlists in Apple's music-management app. Any purchases you've previously made in iTunes are freely available to download whenever you need them, which removes the need to make backups. The application is now mature (some would say a little bloated), but it remains one of the best ways to manage a digital music collection (and buy music via the iTunes store), especially if you also have an iOS device.

Microsoft's new offering is the Xbox Music app. It has some neat features, including a Spotify-like streaming option that offers ad-supported music for six months, and then 10 hours per month unless you upgrade to the paid £8.99 monthly subscription.

You can import your own music into the app, create playlists (which automatically sync between Windows 8, Windows Phone and RT devices) and buy new albums through the Xbox Music store.

It's a very good app, but hampered by controls that don't do as you expect. For example, the Spacebar restarts rather than pauses songs, double-clicking on a track toggles on and off a menu rather than the audio itself, and the search option is hidden away in the Charms bar. A little spit and polish would make Music a real selling point for Windows 8.
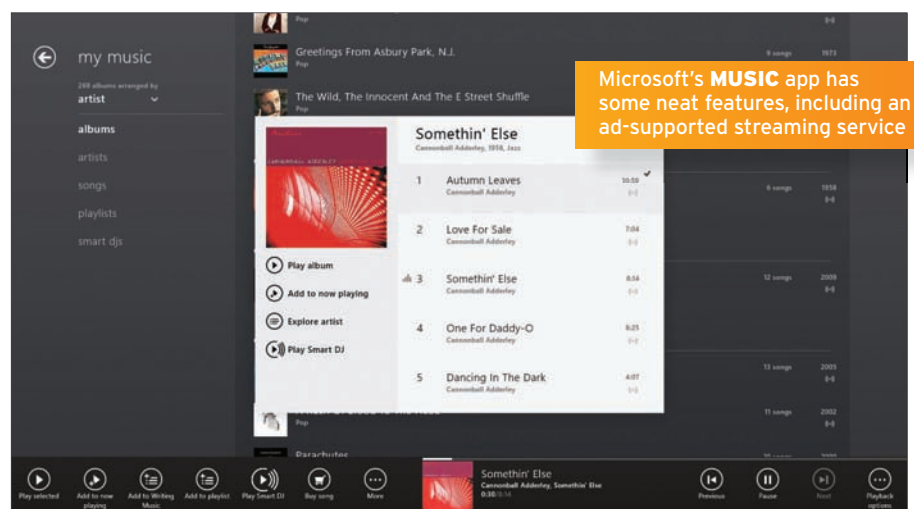
If you prefer, you can use Windows Media Player 12 in the traditional desktop mode.

Plus, although you have to download it, the Zune media-management program is still a decent music manager and the only way to sync content with Windows Phone 7 smartphones (the new Windows Phone app works only with Windows Phone 8 handsets and has extremely poor user reviews).

GAMES

If there's one area in which Windows has always been streets ahead of the competition then it's games. That's still the case when it comes to any release on Steam, Xbox Games, or physical copies you buy from shops.

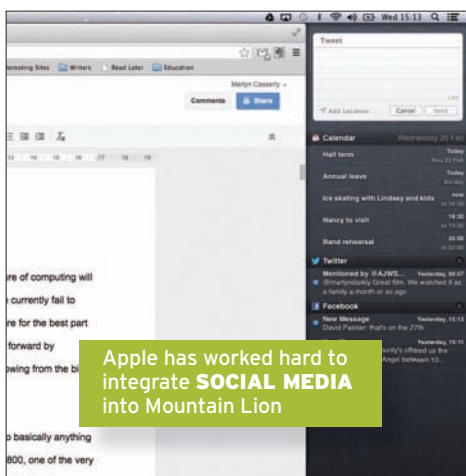Out of the box the story is a little different, naturally. For years Windows users have been able to rely on Solitaire and Minesweeper to while away the hours, but with Windows 8 these stalwarts have gone. Instead users need to open the Games app, in which you can see all the different games (many of them free) available to download.

But you can't download them from there – that would be far too easy. Instead, when you click Play, you receive a message that you must go to the Store to download the title, even though you're in the 'Windows Games Store'. Clicking, for example, 'Get Minesweeper from the Store' does at least take you directly to the game in the Store.

Some great free and paid-for games are available, including touch-based version of Minesweeper and Solitaire. Xbox gamers will also enjoy the way their gaming profiles are included in the Games app, and the ability to purchase downloadable games for their console via the Windows Store.

Macs have never been gaming machines, with even some powerful iMacs struggling to run the most demanding titles. One game that's included with a new machine is a decent version of Chess. Thanks to voice control, you can make your move by saying aloud the board positions rather than fiddling with the mouse. It's a nice touch, but we can't imagine many people using it.

The Mac App store is similar to the Windows alternative, with a healthy number of games to download at a variety of prices. The integrated nature of both stores means there is less risk of you downloading something that will harm your system.

Apple also includes Game Centre, which allows you to compete with friends online if you both have the app and an iDevice.

Microsoft's MUSIC app has some neat features, including an ad-supported streaming service

DOCUMENTS

Opening up documents to read or edit should be an easy enough task – after all, it's one of the most common uses of a computer. Clicking on a .docx file in Windows 8 brings up a dialog box for installing Office. You can circumvent that by selecting Open With and choosing Wordpad. This allows you access to the document and a decent number of options with which to alter the content. PDFs are finally supported by the Windows Reader app, and .rtf files can be opened in Wordpad without any issues.

Mountain Lion has a built-in app called Preview that allows you to view all common document file types. The Text Edit app supports .doc, .docx, .rtf, .txt, and .html files. Using this you can open, edit, then save documents. If you've received the file through email then you can use Mail's Quick Look option to open the document, then click a button to open it in Text Edit if you want to make changes.

SOCIAL MEDIA

Facebook and Twitter have become standard features in many people's digital lives. Both Windows 8 and OS X have native features that tie into the social-media behemoths. We mentioned before how Facebook contacts

Months after its launch, the **WINDOWS STORE** is still lacking in decent apps

Apple has worked hard to integrate **SOCIAL MEDIA** into Mountain Lion

You can easily **SHARE** photos with Facebook from Windows 8's Photos app

be less efficient, with the app often telling us to select a video even after we had done so, which soon became annoying.

No dedicated Facebook or Twitter clients are available for Windows 8, so tablet use isn't as smooth as it could be. You could always browse to the relevant desktop website or entrust with your details one of the many third-party social-media apps in the Store, of course.

Apple has worked hard to integrate social media into the heart of Mountain Lion. Once you've connected your accounts you can

built-in support for the likes of Facebook, YouTube and Vimeo.

Twitter has built a dedicated app for OS X, but Facebook isn't represented in the App Store. Of course, this matters not on a system that is able to behave as a traditional computer – the website will do just fine.

CLOUD INTEGRATION

The Cloud is a big deal these days, and both operating systems offer their own online data storage and synching service.

Apple's iCloud is one of the central pillars of Mountain Lion, with contacts, calendars, mail, photos, music, bookmarks, apps and documents all linked to Apple's online servers. Whenever you make a purchase or take a picture using one Apple product, it will automatically appear on any other Apple devices you own.

For this to work in the way it is designed, all your devices need to be made by Apple. So, if you have an iPad and an iPhone then the slick way in which iCloud moves around your data is very impressive. However, if you own an Android or Windows mobile device then you won't feel the benefit.

Apple gives users 5GB of free storage, but also sweetens the deal by not counting against it your photos or purchases from the App and iTunes stores. If you're immersed in the Apple universe then iCloud is rather special. You can even track your portable devices' whereabouts using iCloud.

Not to be outdone, Microsoft has crafted SkyDrive to be a robust and easy-to-use service. It works in a very similar way to

are used by both, but there are other examples, too. In Windows 8 the Messaging app can be connected to your Facebook account, meaning messages sent on the site appear as IMs in the app.

Sharing photos is also easy from the Photos app. First you need to connect your Facebook account, then choose the Share option in the Charms bar. Videos proved to
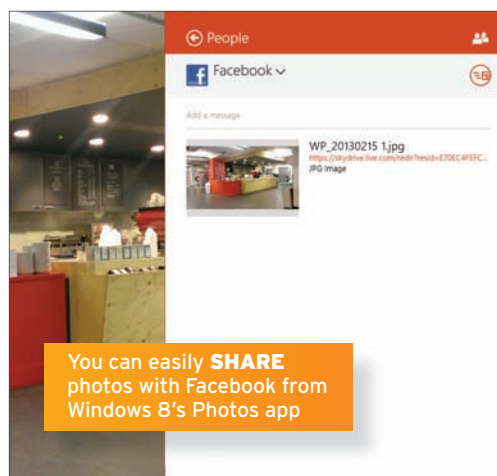
post directly to Facebook or Twitter from the Notification Centre. This can be accessed from anywhere using a simple trackpad gesture.

All direct messages and notifications from the sites also appear here, so you can see who's talking to you without having to visit the desktop website. Just like Windows you can share photos directly within the app, and video sharing is also a breeze with

The **MAC APP STORE** is well stocked with software, and you should easily find what you need

Dropbox and Google Drive, in that any file you save into a designated folder becomes available to any other computer or device on which you have installed the SkyDrive app.

Unlike iCloud, SkyDrive is available for Android, iOS, Windows Phone 8, OS X and every version of Windows from XP onward. You get 7GB of free storage and can buy more if needed. You also have the option to share folders you create with friends, and even create Office documents in the cloud on which friends can collaborate. (By contrast, you can't create a document on the iCloud website – merely view those created in an iWork app.)

If you prefer to keep to the Windows side of the track, or have devices running various operating systems, SkyDrive is an excellent service that offers impressive tools.

APP STORE

For the Modern UI to work it needs apps that are designed specifically for it. As we've seen with Photos, Music, Mail and Contacts, this can be hit and miss even when Redmond's

finest are themselves creating the apps. It's also notable that Microsoft has yet to release a touch-based version of its Office productivity suite.

The Windows Store should be the heart of the ecosystem, but so far it remains a hotchpotch of clients for social-media sites, a few decent games, and a dearth of quality software. There are a few gems, such as Fresh Paint, Evernote, Netflix and Audible, but even several months after its launch there's very little to make the inconvenience of a new user interface seem like an acceptable price to pay. Switch to the traditional Windows desktop, though, and you can run the wealth of software you've previously enjoyed.

Following its success with the iOS App Store, it shouldn't come as a surprise that the Mac version is well designed, well populated, and in general feels like a more developed marketplace. It's noticeable that many of the top-selling apps are Apple's own, but you'll also find Adobe Photoshop Elements, Wunderlist, Scrivener, Twitter, Pocket and a good deal more when you browse the various charts and categories.

There remains the option to download software directly from a developer's website. However, the range of software on offer, when combined with that which Apple includes with all new Macs, suggests that you should be covered unless you require specialist apps.

WEB BROWSING

Neither of the stock browsers are ones this writer uses on a daily basis, with that duty instead falling to Google Chrome.

Windows 8 hedges its bets by offering two versions of Internet Explorer 10. The siblings are honed for the two different desktops, with the Modern UI version sporting a touch-friendly interface, replete with easy-to-press buttons, and the other behaving more like the Internet Explorer of Windows 7.
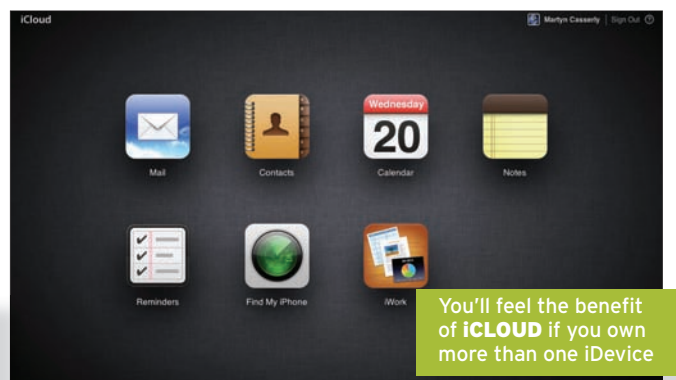
One difference is in the Modern UI version's placing of the address bar in an unfamiliar position at the bottom of the page (curse you, muscle memory). This usefully gives over the entire screen to a web page, but it feels like a design choice that puts form above function – we constantly found ourselves reaching up to the top of the screen, only to find nowhere to enter a URL.
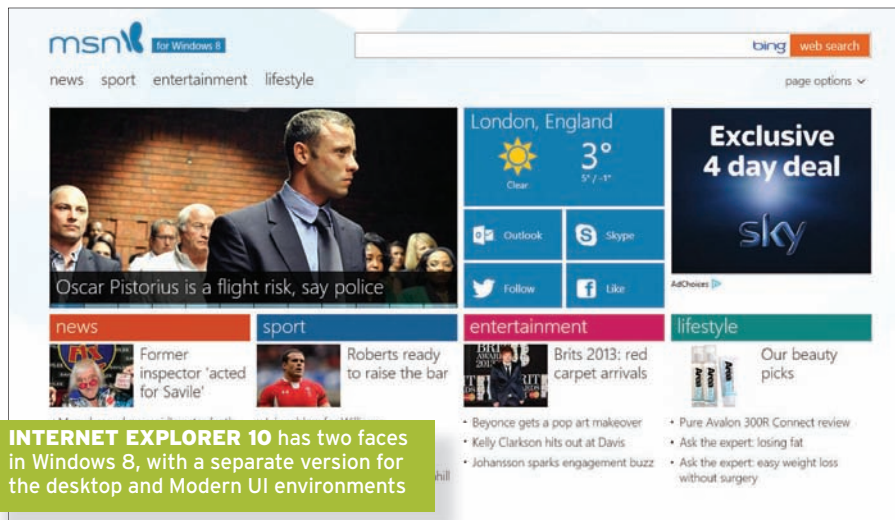
The Hidden theme tucks out of view all your tabs and bookmarks, too.

In use, Internet Explorer 10 is zippy in either of its guises, but the over complication of the menu makes the Modern UI version one to avoid. The desktop edition is solid, offers far more functionality, and gets the job done without any fuss.

Apple's Safari browser has a conventional design that's more in line with the desktop edition of Internet Explorer 10. Apple has finally unified the address bar and search function, and your bookmarks are available in drop-down menus that you can order any way you like.

Safari loaded pages slightly faster than Internet Explorer in our tests, too.

SKYDRIVE is an online storage and synching service that isn't restricted only to Windows

You'll feel the benefit of **iCLOUD** if you own more than one iDevice

The dull overuse of grey in the menu bars isn't pleasant to look at, and the fact that tabs display only the name of a page and not their favicon means it can become difficult to tell them apart when several are open.

iCloud integration is a nice addition: open tabs are synchronised with your other Macs and iDevices, making it easy to carry on reading the same page as you move between iPhone, iPad and Mac.

Flash needs to be downloaded to use sites such as iPlayer that still rely on it, but this is a minor quibble.

SHARING FILES

Homegroup is a simple way to set up sharing on a home network so that Windows machines can talk to each other. It also allows users to share a variety of files and attached devices such as printers.

Once a Homegroup is configured, any other Windows 8, 7 or Vista machine can join the network by entering the Homegroup password on their own machine. It's an easy and effective solution that doesn't require any knowledge of IP addresses, subnet masks or other parameters that less-techie people shouldn't have to bother with.

Using a Homegroup you can keep data on one computer and allow others access to it. In wider area networks you can use the

Shared folder option in SkyDrive to transfer files to PCs, Macs, or mobile devices.

Apple has a similar function with File Sharing. It allows you to specify which files are available to share with other computers on the network. It also has a Mac-specific feature called AirDrop, with which you can send files directly to another user as long as they also have the app running. It takes seconds to get up and running, and creates an encrypted, peer-to-peer connection between the two computers for securely sending files. It's very easy to use and, in our tests, proved much quicker than email.

SECURITY

One stick with which Mac users will often beat Windows adherents is the absence of viruses in OS X. They have a point, and it isn't simply the 'security through obscurity' argument, although that's part of the equation. Hackers want your money, and the easiest way to get it is by targeting the most popular operating system: Windows.

OS X uses a Unix-based file system and kernel, which is more difficult to infect with a virus. It isn't flawless, but you're less likely to encounter a virus on a Mac than a PC.

There have been a few public attacks on Macs in recent years, so Apple now includes Gatekeeper anti-malware protection. This works on the basis that developers are issued unique IDs with which they can sign their apps. If you download software outside the App Store, Gatekeeper will warn you when the app doesn't contain a valid signature.

Microsoft has improved many of the security features previously offered through Security Essentials, making the new OS the most secure version of Windows yet. SmartScreen affords a good level of protection against malware by examining software before you install it and warning of any inconsistencies. Windows Defender also fights off incoming viruses, and the new UEFI secure boot should prove a hard nut to crack for bootloaders and rootkits.
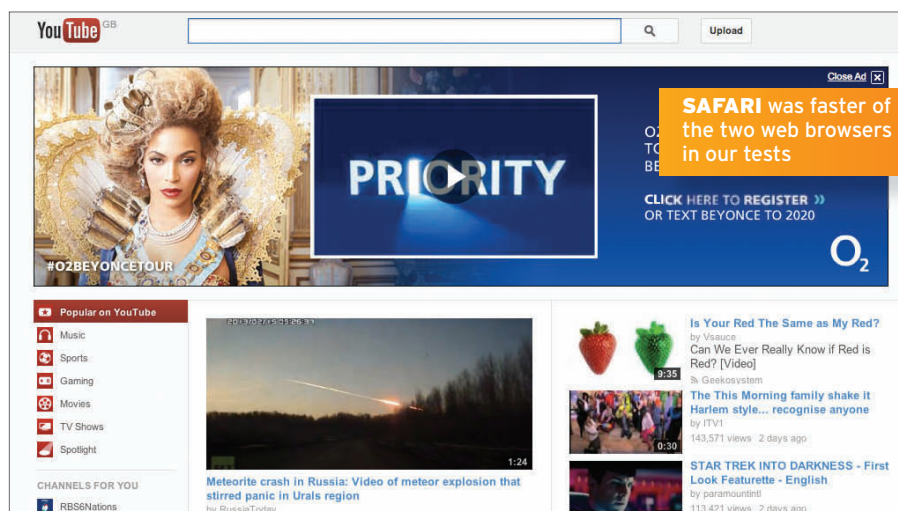
CONCLUSION

Windows 8 was in for a rough time with this test. Microsoft has taken on a major update to the underlying engine of an OS, as well as a radical overhaul of its user interface. It was also facing a version of OS X that has built incrementally on the lessons learned from previous versions, with nips here and tucks there to subtly improve the user experience.

The approaches to the two designs tell their own story about the companies behind the operating systems. Apple has for many years played second fiddle to Microsoft in terms of operating system market share, and has therefore developed a mentality of being less reliant on third parties for hardware or software.

OS X

Primarily a hardware company, Apple needs to offer a complete user experience if it wants to sell you the expensive machines that adorn its high-street stores. This means that, out

iLIFE is bundled with all Macs

of the box, a Mac comes with pretty much everything the average user needs, and there are some fun extras thrown in. For example, Garageband can be used to create your own music.

Apple's well-worn mantra of 'it just works' is in most cases borne out to be true, and Mountain Lion is a solid operating system that interacts smoothly with the various extra applications included. Entering this land of plenty comes at a cost, though, with desktop machines that lack a monitor and keyboard starting at £500, and laptops costing from £849. To take advantage of advanced features such as AirDrop and iCloud you will need at least one other Apple device, too.

If you're willing to make such a strong commitment to a single supplier then the overall experience and interoperability of Mountain Lion is an excellent platform that feels mature and highly polished.

WINDOWS 8

Microsoft's new direction still feels as though it's in the development stage, with the Modern UI apps lacking functionality and, at times, even common sense. The traditional desktop is where most people have pitched their tents, with those who run Windows 8 at *PC Advisor* barely having cause to interact with the new Start Screen, but it's an uncomfortable compromise.

PAINT is ill-equipped for editing photos – it can't even remove red-eye
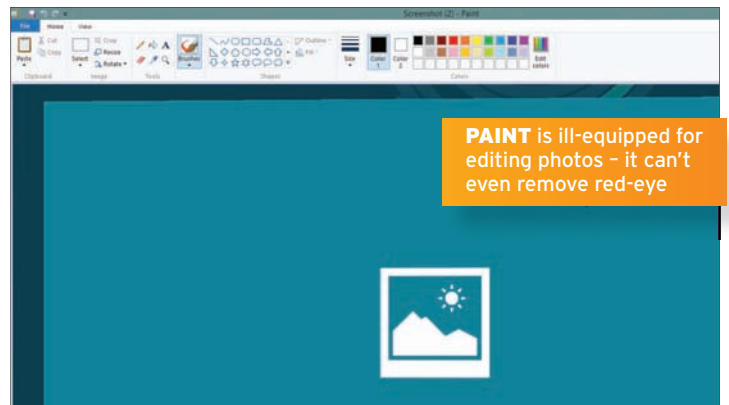
Whereas Mountain Lion offers you applications that work together to help you achieve your goals, Windows 8 is a little like two sides of a personality at war with itself. The two versions of Internet Explorer 10 are a prime example.

Without additional software the OS is neutered and incapable of even some basic tasks such as removing red-eye from photos. The worst thing is that it all seems so unnecessary. Under the frilly curtains of the Modern UI beats the heart of a powerful and well-designed engine – one that, if freed from the touch-obsessed overlay, would be the best version of Windows we've encountered.

Windows 8 is fast and stable, which is exactly what you need from an OS. But the Modern UI demands that you in effect relearn how to use Windows, and the benefits (even with a touchscreen) aren't worth the effort.

The Windows Store is bereft of quality apps, Microsoft's own applications are pretty but dumb, and only the Music app looks like something that's actually finished. Should this paucity of riches be the reason to hobble a whole desktop OS just so that tablets and phones look the same? We don't think so.

Of course, once you move beyond the confines of the out-of-box experience you can tailor Windows to be almost anything you want, with a superb range of third-party options available. The problem is that for a Windows 8 machine to be truly usable this is in essence a requirement. ⊠

Get fit with tech kit

Need some motivation to get off the sofa and do some exercise? Jim Martin investigates the gadgets that offer exactly that
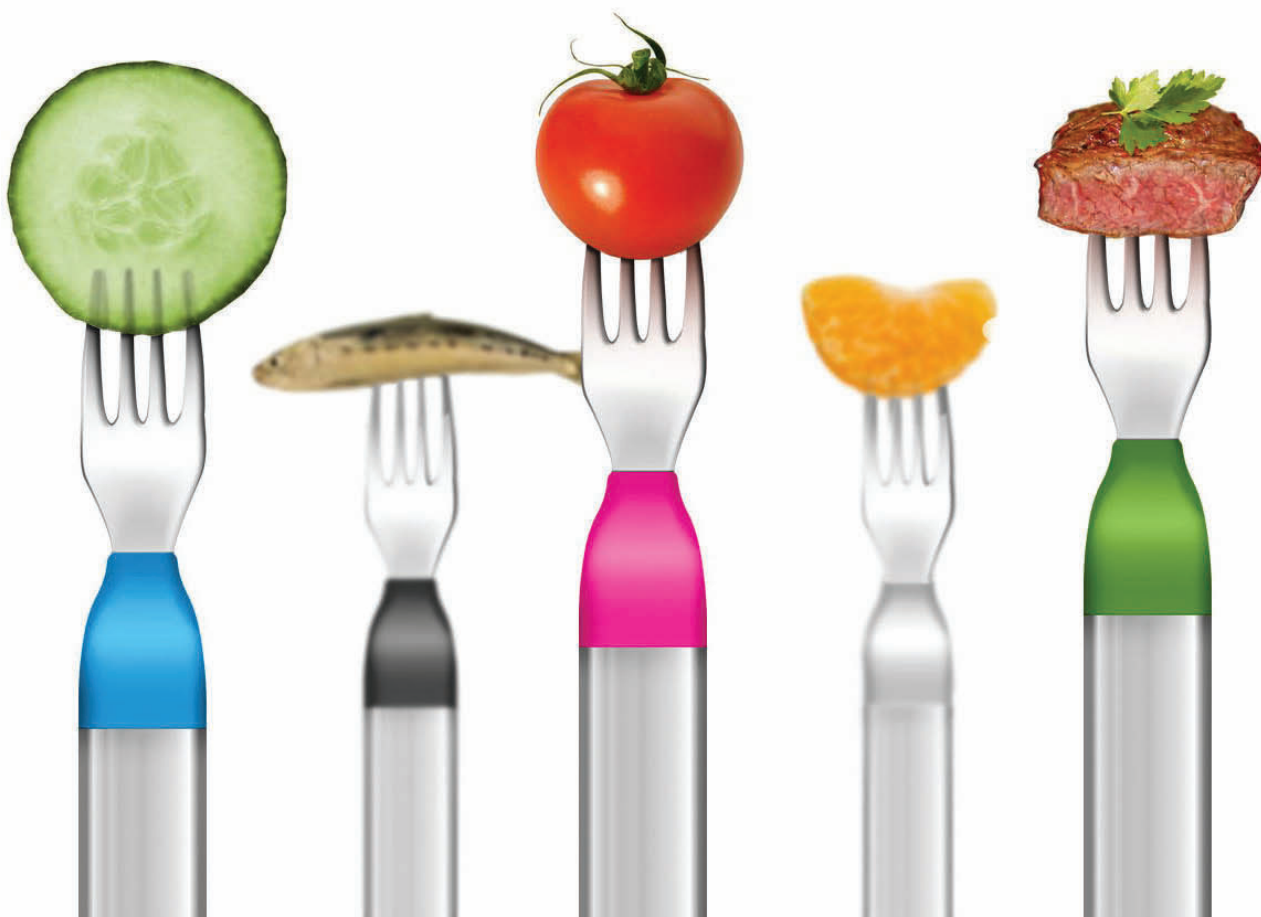
HappiLabs' HapiFork claims to help you eat more slowly to aid digestion and weight loss

We all know how hard it is to keep those New Year's resolutions, and the number-one resolution year in, year out is to lose weight. If you've managed to stick to a diet since 1 January, you're doing better than most people.

We're not going to talk much about diets here, though. We're far more interested in what technology can do to help you exercise. Over the past year or two, wearable technology has exploded in popularity. You can now buy affordable fitness gadgets such as the Fitbit One and Nike Fuelband.

These and other devices promise to help you achieve your goals, including walking or running longer distances, being more active, or losing weight. Alternatively, you can use them to find out how active you are in general, then use that information to work out whether you need to do more.

Given that most of us probably don't eat as well as we could, nor exercise as much as we should, this is undoubtedly a good thing.

A growing trend is fitness gadgets that work with your smartphone or tablet to give you at-a-glance updates and extensive

reports on your progress. We'll also take a look at some apps that require no extra equipment, taking advantage of your smartphone's GPS receiver and other features to turn it into an activity tracker.

If you don't want to use your mobile device, most fitness gadgets provide the same information via a desktop browser.

We'll also look at Nike and Microsoft's a Kinect-based Xbox 'game', which puts a personal trainer on your TV, plus other TV-connected exercise bikes and a fork that claims to make you eat less.

Whether you're a fitness freak, a couch potato or anything in between, fitness tech should have a place in your life. There's a huge range of gadgets that will appeal to just about everyone, whether you're a runner, a cyclist or a swimmer.

These gadgets can be both inexpensive (there are plenty of free fitness apps and sites) and effective at helping you achieve your goals.

Technology can be extremely helpful in getting you fitter, whether you're using a basic free app on your smartphone or a pricier wireless gadget that can give you more information, such as the number of floors you've climbed, the quality of your sleep or your heart rate.

The real advantage technology brings is its ability to capture data and offer motivation by allowing you to see how much exercise you're doing, which days or times you're most active, how well you're sleeping, how much you're eating and drinking, and more.

In many ways it's similar to those electricity monitors that have also become popular over the past few years. Until you can see a figure on an LCD, it's difficult to work out how many watts your appliances are consuming. Flick on the kitchen lights, for example, and the figure immediately jumps up, revealing just how much power those halogen down-lighters gobble up. A paper bill delivered through your letter box every three months just doesn't have the same effect.

ACTIVITY TRACKERS

While detractors might say that activity trackers are nothing but overpriced pedometers, there are many who will appreciate and genuinely benefit from seeing a graph showing how many steps they've walked each day for the past month – something that may spur them on to doing more exercise the following month.

Most trackers will give you more information than this, of course. The Fitbit One, for example, has a built-in altimeter and it can give you a reasonably accurate gauge of how high you climbed on a particular day, and a more accurate number of calories burned as a result. With all Fitbit trackers you also get a pop-up message on your phone when you near your daily goal, giving you a nudge to hit those 10,000 steps.

In most cases, all you have to do is wear the device and go about your daily life. It's no hassle at all, and you'll probably forget about it after a while. If you're willing to put in a little more effort, however, you can also keep a log of what you're eating, how much water you're drinking and track your weight (there are Wi-Fi scales for this – Fitbit's Aria costs £130 – that will upload your weight to an online account).

Logging everything you eat can be a chore, but if you tend to eat the same things it's very quick to select those items from a 'recent' list. Plus, some trackers have a tie-in with MyFitnessPal, a popular app with an unrivalled food database that includes every item of food and drink users have entered. Although there are errors as with any crowd-sourced project, you'll almost never have to work out the number of calories a meal contains – just search for it in the app.

Many activity trackers involve gamification, which means there's one more reason to be active. As long as one or more friends also have a compatible gadget, you can see how they're doing (typically via a website or app) and try to beat them. If you're so far ahead of the curve that none of your friends have, say, a Nike Fuelband, you'll still be rewarded with achievements.

There is a danger, however, that you merely use a tracker to record your daily activity. That's why the best models are those that provide an incentive to do more exercise. Whether that's because you're able to compete with friends, or through gamification, you should always be trying to do more,

Top 10 tips for making the most of your activity tracker

Erica Harris, an avid Fitbit One user, suggests 10 ways you can get more exercise into your day without changing your routine

- If you already walk to work, consider leaving five or 10 minutes earlier so you can extend your route and get closer to your daily step goal
- Always take a lunch break and go for a walk or run. If it's bad weather, maybe you can walk around your office or a local shopping centre instead
- When taking a toilet break, walk to the one that's furthest away: preferably a few floors up or down if you can
- Aim to get up from your desk at least once an hour – walk to the watercooler
- Instead of emailing a colleague go and see them in person
- Stairs are your friends. Use them instead of the lift or escalator
- Pace around when waiting for the kettle to boil or talking on the phone
- When waiting for a train don't stand still: walk slowly up the platform
- Get competitive. Find friends with activity trackers (it's easier if they use the same system) or compete against yourself. Try to beat your previous best figures, whether that's steps, distance, calories or stairs climbed
- Set tougher, but realistic, goals. Don't stick with the same daily goals month in, month out. Try adding 10 percent more steps each week and see if you can still hit the targets

whether that's leaving your desk at lunchtime to do a quick run or walking to the watercooler at the other end of the office instead of the one by your desk (see box above).

Another disadvantage with some activity trackers is that they don't monitor your heart rate, so they can't accurately measure how hard you're exercising. Those that do tend to be costly, but the outlay can be worth it if you intend to do some serious training.

Activity trackers aren't intended to replace your regular trip to the gym. You should do some strenuous cardio workouts each week, while a tracker should motivate you to keep active throughout each day.

APPS

If you have a smartphone, particularly an iPhone or Android handset, there are plenty of apps that can turn it into an activity tracker. Some are designed for specific activities, such as running or cycling, while others are more generic.

Yet others can help with fitness in different ways, such as logging your food and drink intake. For some people, this is the most effective way to lose weight. Simply by seeing how much you eat can shock you into changing your eating habits.

We've already mentioned MyFitnessPal, which is available for iPhone, Android, BlackBerry and Windows Phone smartphones. This can synchronise with Fitbit, Scosche, Runtastic, Withings and other apps, making it easier to keep diet and exercise tracking in one place.

You set a calorie goal, then add the food and drink you eat throughout the day. Chances are you won't have to manually add much, and if you tend to eat the same things it's fast to add items from the 'recent' list.

Apps such as MyFitnessPal can help you see exactly how many calories you're consuming (and how many you're burning through exercise), and can help you to lose weight by changing how much (or what) you eat or showing you how much exercise you need to complete to offset those calories.

Another example is Runtastic. Although primarily for runners, this app also good for tracking your cycle rides, since it uses your phone's GPS to record your route. Such apps will quickly drain your battery, but may work out cheaper than buying a separate GPS device. An external USB battery can prolong or recharge your phone for £10- to £20. You can even pair Runtastic with a compatible Bluetooth heart-rate monitor (£70) to get a more accurate assessment of your activities.

Or, you might consider the Beurer PM200+ runner's kit, which includes a heart-rate monitor, receiver (which plugs into your phone's headphone socket) and an armband to hold the phone and receiver. The kit allows you to track elapsed time, distance, calories burned, speed, elevation and heart rate. The PM200+ works with iPhone, Android, Windows Phone 7 and BlackBerry, and costs £80.
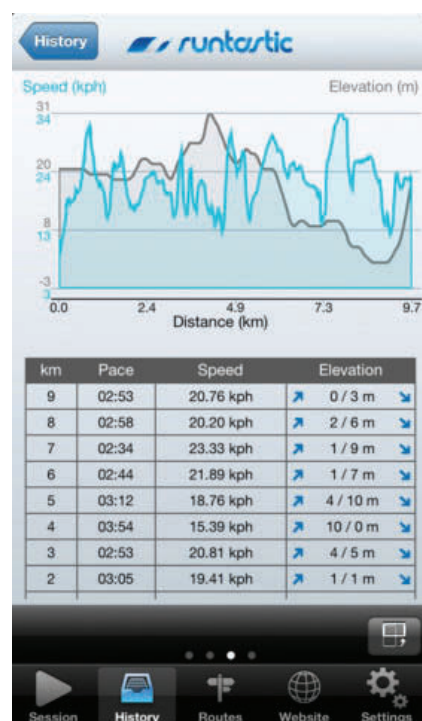
An alternative to Runtastic, if you have an iPhone 4S or 5, is Polar Beat. This heart-rate monitor costs around £60.

Both apps offer vocal guidance, and Runtastic lets you set a 'power song' that you can activate when you need motivation.

Unless you can pop your phone in a pocket or backpack, you'll also need to budget for an armband or a bike mount.

Many other apps are available for iOS or Android (and in some cases BlackBerry and Windows Phone). You might want to investigate MapMyRun, SmartRunner, Nike+ Running, Adidas MiCoach and Endomondo. With Bike Hub and CycleStreets you can use your phone as a cycle satnav; if you have a Symbian device, check out Sports Tracker.

You can also set up your phone (or tablet) as a virtual reality trainer and make indoor sessions more fun. Kinomap is a relatively new app that works with exercise bikes, treadmills and rowing machines. It features geo-located user-captured video, so that you can virtually ride, row or run the course and see your progress on a map.

that requires the Wii Balance Board (from around £50). If you already own a Wii it's worth considering, but you might be disappointed that the exercises lack intensity.

The same can't be said about the Nike+ Kinect Training 'game' for the Xbox. As the title implies you need a Kinect for it to work, so the overall package is more expensive. However, it's well worth it, since Nike+ Kinect is in effect a personal trainer that gives you a customised workout regime based on your current fitness and your goal (lose weight, get toned or get strong). You do an initial set of exercises so the trainer can see in which areas you're strong and where you need improvement, such as balance or endurance.

Kinect integration allows the camera to monitor your movements. The virtual trainer can then guide you on how to carry out the exercises, for example to "make sure you keep your heels off the floor", and warn you if you're doing it wrong. It's so accurate that it will count reps only when you're doing them properly, and the voice guidance means you don't need to look at the TV.

There's also a companion app for the iPhone that lets you keep track of your progress through a programme, will remind you when your next session is coming up and lets you compete with friends.

If there's one disadvantage, it's that you need quite a bit of room: some exercises require you to stand or move to certain positions on the floor. You'll need to clear at least a 7x7ft square.

Plenty of other Kinect games fall into the exercise category, albeit in a much less serious way. Kinect Sports will get you moving, as will Kinect Adventures (which comes with the Kinect sensor) and the Dance Central and Just Dance series. There are also a couple of Zumba titles.

The app needs specialist hardware and also requires you to pay a monthly subscription to access the videos. However, if you can output the video to a TV, it could be useful until the weather improves.

GAMES CONSOLES

Games consoles can also be used to improve your fitness, and Nintendo's Wii Fit has long dominated this market. It's an exercise game

FITNESS GADGETS

Cycling gadgets

If you don't have a smartphone, or at least not one that's compatible with all the apps we've mentioned, there are still plenty of other fitness gadgets available.

Activity trackers

		Price	Tracks	Extra features	Pros	Cons	Smartphone support
Fitbit Zip		£50	Steps, distance, calories	None	Inexpensive, built-in Bluetooth and display	Not rechargeable	iPhone 4S/5, Samsung Galaxy S III/Note II
Fitbit One		£80	Steps, distance, calories, floors climbed, sleep	Vibrating alarm, altimeter	Built-in display	Proprietary charging cable, inconvenient to wear at night	iPhone 4S/5, Samsung Galaxy S III/Note II
Fitbit Flex		£80	Steps, distance, calories, sleep	Vibrating alarm	Convenient to wear all the time	Basic display, no altimeter	iPhone 4S/5, Samsung Galaxy S III/Note II
Fitbug Orb		£45	Steps, distance, calories, sleep	None	Real-time updates during workouts	Subscription fee, no display, not rechargeable	iPhone 4S/5, Samsung Galaxy S III
Jawbone Up		£100	Steps, distance, calories, sleep	Vibrating alarm	Idle alerts, waterproof	No wireless sync, basic LED indicators	iOS 5.1 or later and Android 4.0 or later
Nike Fuelband		£130	Steps, distance, calories	NikeFuel	Easy to charge, waterproof	Expensive, doesn't track sleep or stairs climbed	iPhone 4S/5
Scosche Rhythm		£100	Steps, distance, calories	Heart-rate monitor, music control	Waterproof, real-time voice feedback to maintain intensity	Designed to monitor only workouts, not a standalone device (requires phone or tablet)	All iPhones, Samsung Galaxy S III

For cyclists, there's the range of Tacx VR trainers. Unlike a regular turbo trainer, which many cyclists use to build up or maintain fitness throughout the winter, a VR trainer removes the boredom.

You can take part in races, which are displayed on your laptop or PC's monitor, along with Google Earth maps and elevation/speed graphs. It's similar to the Kinomap app, but its use of a motor brake that varies the resistance according to terrain provides more realism. This means hills are as tough to climb as they are in real life, and your rear wheel will spin on downhill sections.

Such systems aren't cheap: they range from around £500- to £1,500, and you'll pay more if you want to buy more virtual routes to cycle. Multiplayer versions are available.

You can buy an exercise bike that will work with a Samsung Smart TV, PS3 or Wii to provide entertainment for the more casual rider. BigBen's Cyberbike can be picked up for as little as £100, but make sure you buy the right version for your console or TV (you'll need a 2012/2013 Samsung Series 6000 TV or above if you don't have a Wii or PS3).

Instead of recreating real-world routes, the Cyberbike is all about entertainment. In Cyclobooster you ride through a village, canyon or forest, avoiding obstacles (steering using the handlebars) and collecting coins. Popstar run off is even wackier: you control a popstar being chased through a city by crazy fans. There's also a game where you control an ostrich and have to find its eggs.

When the weather is good enough to ride in the real world, one of the best cycling satnavs and activity trackers is the Garmin Edge 810. As well as providing all the functions of a normal bike computer, the 810 works with wireless sensors (such as a heart-rate monitor and speed/cadence sensor) and can record your ride. It has a free iPhone app, too.

You can also use the Garmin as a traditional satnav for calculating routes and getting directions, or you can plan a route and wirelessly upload it to the device. The 810 has a 2.6in colour touchscreen that's both waterproof and easily readable in direct sunlight. It costs around £450 with the sensors.

If you're not bothered about wireless connectivity and apps, the Edge 800 costs closer to £300 with the sensors and basemap. You'll need a more detailed map for it to be any use as a satnav, though, and you have a choice of City Navigator street maps or using free Open Street maps.

There are also cheaper models in Garmin's Edge range, including the £150 Edge 500.

Watches

For runners and swimmers, a variety of watches is available to track your activity. Some work with heart-rate monitors and also have GPS trackers, while others are cheaper and have more basic functions.

Polar's RCX3 watch, for example, comes with a heart-rate monitor and costs around £125. It aims to help you train at the right intensity to hit your goals – typically training for an event such as a marathon – and is compatible with most of Polar's sensors including GPS (a bundle costs £250).

Garmin also has a range of watches, including the Forerunner 10, which includes GPS for under £100. It can track your speed, distance, calories burned and more.

Garmin also has a watch designed for swimmers, appropriately named Swim. It costs around £130 and will track your distance, pace and stroke count, and estimate the calories burned. You set the pool length, and it automatically detects what stroke you're swimming, then records your distance and calculates your swolf score. When you're finished, you can automatically sync the data with your computer and upload it to Gamin's website.

One of the more bizarre fitness gadgets is the HappiLabs HapiFork. It's one of the strangest we've seen, and claims to help you eat more slowly to aid digestion and weight loss. The idea is that you will end up eating less as you feel full before you've eaten too much.

Using vibration alerts and LED indicators, the HapiFork will let you know when you're eating too fast by accurately detecting when you bring the fork to your mouth. You can upload the data via USB to the website and keep a track of how long it took to eat each meal, intervals between 'fork servings' and enter other data such as your sleep and physical activity. Helpfully, the clever HapiFork is dishwasher-safe and costs around £100. ⌧

PC ADVISOR AWARDS 2013

WINNER

PC ADVISOR AWARDS NOMINEES

We are proud to present our roll-call of honour: the best of the past year's technology, and our guide to the brands you can trust and the sites from which to buy

WIN £100! IN AMAZON VOUCHERS PCADVISOR.CO.UK/AWARDS

The votes are still coming in and the arguments raging, but the nominees for the *PC Advisor* Awards have been decided for another year. As with last year's awards, there are nearly two-dozen prizes. Many of our award categories have been wrangled over by our team of reviewers and writers, while the rest will be decided by *PC Advisor* readers before the winners are announced in early 2013.

The purpose of the *PC Advisor* Awards is to showcase excellence across the diaspora of products and services we cover online, in our

apps, and right here in the *PC Advisor* print and digital magazines. Nominees and winners have been chosen from a year's worth of reviews, so each represents the best of the best in its particular category.

For the hardware awards, we've split up the categories along similar lines to the Top 5 charts we update every month, while we've divided the software section by program type.

In each case, products in contention had to have been reviewed by *PC Advisor* editors during 2012. Those reviews could have been online or in print – or, most often, both.

In addition, there are five *PC Advisor* Reader Awards. We will be running an online survey, inviting UK consumers to have their say on the best laptop and desktop PC brands, the best online retailers, and the gadget of the year. From the votes we receive we'll be able to deduce valuable feedback about the brands you favour and how well they live up to expectations. So don't forget to have your say! Head to pcadvisor.co.uk/awards.

HARDWARE AWARDS

PC ADVISOR AWARDS 2013
WINNER

Best Windows Desktop PC Brand
- Chillblast
- CyberPower
- Lenovo
- PC Specialist
- QuietPC

Best Budget Laptop
- Acer Aspire V3-571
- Asus K55VD
- Dell Inspiron 15R 5520
- HP Envy Ultrabook 6-1010ea
- Lenovo IdeaPad U410

Best Windows Laptop
- Alienware M14x
- Lenovo IdeaPad Z580
- Samsung 900X4C
- Samsung Series 7 Chronos
- Toshiba Satellite Z930 Ultrabook

Best 7in Tablet
- Apple iPad mini
- Google Nexus 7
- Amazon Kindle Fire HD
- Barnes & Noble Nook HD
- BlackBerry PlayBook 2.0

Best 10in Tablet
- Apple iPad with Retina Display
- Google Nexus 10
- Samsung Galaxy Note 10.1
- Toshiba AT300
- Asus Transformer Pad Infinity TF700

Best Smartphone
- Apple iPhone 5
- Google Nexus 4
- HTC One S
- Motorola Razr i
- Samsung Galaxy S III

Best Monitor
- AOC i2352Vh
- BenQ G2750HM
- Dell S2440L
- ViewSonic VX2336s-LED
- Philips Brilliance 241P4QPYES

Best Printer
- Canon Pixma MX895
- Epson Stylus Photo PX730WD
- HP Photosmart 7520 e-All-in-One
- Lomond EvoJet 2 Office
- Pantum P2050

Best Wireless Networking Product
- Apple AirPort Express
- D-Link DIR-857
- DrayTek Vigor 2850Vn
- TP-Link TL-MR3020
- Netgear WN3000RP

Best Network Storage Device
- Netgear NAS Duo V2
- Qnap TS-659 Pro II
- Synology DS-412+
- WD My Book Live Duo
- Zyxel NSA325

Best Storage Device
- Corsair Performance Pro 256GB
- G-Technology G-Raid with Thunderbolt
- Hitachi Deskstar 5K4000 4TB
- Samsung 830 Series 256GB
- WD Red 3TB

Best Portable Storage Device
- Buffalo MiniStation Extreme 1TB
- Elgato Thunderbolt SSD
- Freecom Mobile Drive Sq 500GB
- iStorage diskAshur 500GB
- WD My Passport Edge for Mac 500GB

Best Graphics Card
- Asus GTX 660 Ti
- MSI GeForce GTX 670
- Sapphire HD 7770 OC
- XFX 7970 3GB GDDR5
- Zotac GeForce GTX 680

Best Camera
- Canon EOS 650D
- Nikon D800
- Panasonic Lumix DMC-TZ30
- Samsung NX20
- Sony NEX-C5R

Best Audio Product
- Apple GarageBand for iOS
- Bitcount ClearTune
- Cambridge Audio Sonata NP30
- Chord Electronics Index
- Ferguson Hill FH009

Best Digital Home Device
- Belkin @TV Plus
- BT YouView Humax DTR-T1000
- EnergyEgg Solo
- HD Anywhere Multiroom+
- Sony BDP-S790

Best TV
- Panasonic Viera TX-L47WT50
- Philips 46PFL7007
- Samsung UE46ES6800
- Sony Bravia KDL-46HX853
- Toshiba 46TL963

SOFTWARE AWARDS

PC ADVISOR AWARDS 2013 WINNER

Best Security Software
- Bitdefender Internet Security
- G Data InternetSecurity
- Kaspersky Internet Security
- Norton Internet Security
- Trend Micro Titanium Internet Security

Best Photo/Video Software
- Adobe Photoshop CS6
- Adobe Premiere Elements 11
- CyberLink PhotoDirector Ultra 4
- InPaint
- Magix Movie Edit Pro 2013

Best Game
- Far Cry 3
- Guild Wars 2
- Mass Effect 3: Extended Cut
- Torchlight II
- World of Tanks

Best Mobile Game
- Bad Piggies
- Draw Something
- Football Manager Handheld 2012
- New Star Soccer
- Walking Dead for iOS

BUSINESS AWARDS

PC ADVISOR AWARDS 2013 WINNER

Best Business Laptop
- Acer TravelMate P6
- Dell Latitude E6420 ATG
- HP ProBook 4530S
- Lenovo ThinkPad X121E 3045
- Toshiba Portégé Z930-108

Best Business Printer
- Dell C3765dnf
- Epson WorkForce Pro WP-4595 DNF
- HP LaserJet Pro 400 M401dw
- Kyocera Ecosys FS-4300DN
- Oki C530dn
- Samsung ML-2955DW

Best Business Software
- Acronis True Image Home 2013
- Crunch
- Dragon NaturallySpeaking 12 Premium
- Nuance PDF Converter Professional 8
- Paragon Drive Copy 12 Professional
- Xero

READER AWARDS

PC ADVISOR AWARDS 2013 WINNER

- Best Specialist Online IT Retailer
- Best Laptop Brand
- Best Desktop PC Brand
- Best Online Retailer

Have your say and you could win £100 in Amazon Vouchers!

For your chance to win £100 in Amazon vouchers, and to have your say on the latest technology and services, head over to the PC Advisor Awards page and vote now:

PCADVISOR.CO.UK/AWARDS

JIM
MARTIN

Tech Help

Expert advice

Once you've owned a smartphone, you can't imagine how you lived without it. Apps are one of the main attractions, but they can make you feel as though you have to stick to the same platform when upgrading your handset. It's not as difficult to switch as you might think, though. On page 100 we explain how to transfer media and data from an iPhone to Android.

As you install more and more software on your PC, it will gradually boot more slowly. On page 108 we show you how to use the powerful Autoruns utility to disable unnecessary startup programs and speed up your computer.

If you've never heard of IFTTT, you're missing out. This brilliant free web service lets you automate tasks on popular websites to save you time. Find out what's possible on page 110.

Whether you need to record a call for legal reasons, or simply don't want to miss a word, we show you how to record Skype conversations using CallNote on page 112.

We think editing photos should be easy and fun, and that's why we like Snapseed. Find out how to touch-edit images on your Android or iOS smartphone or tablet on page 114.

Also see our advice on tidying up your Windows desktop using StarDock Fences (page 116), and our beginner's guide to business networking with LinkedIn (page 118).
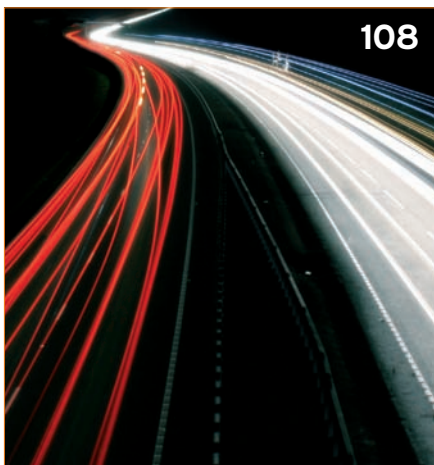
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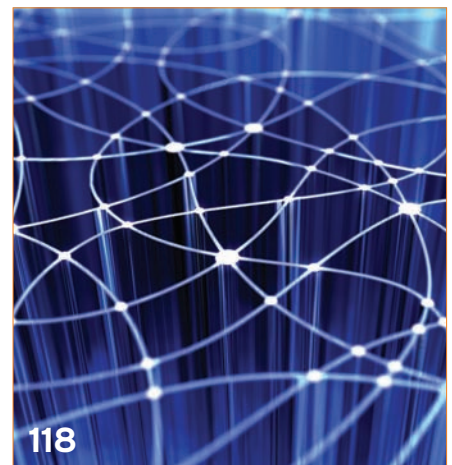
118

QUICK TIP: SET UP GOOGLE ALERTS

Google Alerts is a useful service for receiving notifications when topics in which you're interested pop up on sites around the web.

Instead of using Google Search to find a particular topic, Google Alerts can do all the hard work for you. When setting up your custom alert you can specify how frequently you want to be emailed a list of relevant articles, too.

Say you want the latest news on the latest Samsung or Apple products. Head to google.com/alerts and sign into your Google account. Type a search term into the box and you'll see a preview of what the alert would look like on the right.

Use the Result type box to filter the results by News, Blogs, Discussions, Videos or Books, and set the frequency to suit.
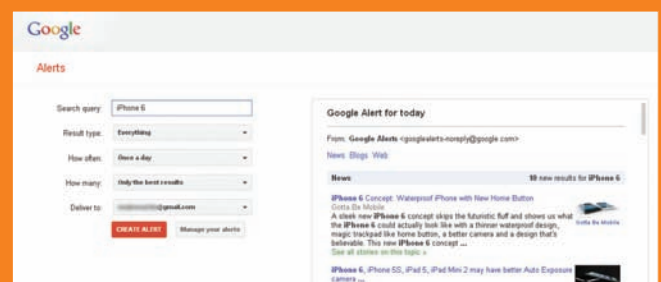
You can set up as many alerts as you like, and remove them by clicking the 'Manage your alerts' button. ⊠

Migrating from iPhone to Android

Matt Egan explains how to transfer your contacts, calendar, photos, video and music from an iPhone to an Android smartphone

Since it launched in 2007 the iPhone has been the undisputed king of smartphones. Google Android and BlackBerry were cheaper alternatives, but those who could afford it chose Apple's smartphone. Not any more.

Android's Google Play now has more apps than Apple's App Store, and its Music, Books, Movies & TV and Magazines apps rival their iPhone equivalents. You can even use multiple music stores within Android.

All things considered, you may be toying with the idea of moving from iPhone to Android. Here, we outline the things you ought to consider before you move, then show you how to transfer from iPhone to Android your contacts and calendar data, photos, video, music and e-books.

Things to consider

Not all Androids are equal. There are myriad Android operating systems, of which you should plump for Ice Cream Sandwich or Jelly Bean. There's no guarantee your phone maker will upgrade the Android OS when a new version is released.

Email, Twitter and Facebook work in Android much as they do on an iPhone – moving email and social accounts is as simple as entering your username and password on the new phone.

Do consider accessories such as speakers, adaptors and cases you have amassed for your iPhone, however. Don't assume that these will work with your new device.

Apps are also a factor. Your favourite iOS apps should be in Google Play, but some still appear in the App Store first. If your apps were paid for, consider that you will have to pay a second time to download the Android versions. You'll often find a difference in app pricing between the two platforms, with those for Android sometimes cheaper.

Due to the differing specifications of the many Android smartphones on the market, not all handsets can install all apps. Any unsupported apps won't be visible in Google Play when accessed via your phone; you can check their requirements using a PC browser.

Bear in mind that some features native to iOS require you to install third-party apps on Android. There's no native Android equivalent of Find My iPhone, for instance, although such a feature is often included with Android security software. And that's another thing you might like to install, should you download any apps outside Google's store. The best Android security apps let you track, wipe and brick your handset in the event of theft. These are usually free, and come either as standalone products or as part of your PC security software.

For video-chatting there's Google Talk and Hangouts. You can also install Skype. There's no Android equivalent to iMessage, but the rest of the world is already using Viber and Whatsapp for mobile messaging. There's no iCloud either, but plenty of cloud services including Google Drive are available.

Most iTunes music files are DRM- free, which means you can play them on any compatible device. But there is no legitimate way of viewing iTunes video, Newsstand magazines and iBooks on Android.

Contacts

The most important data you'll need to transfer is your contacts. Having a free Google account (which you'll need if you want to make the most out of your Android smartphone) makes this straightforward.

Plug in your iPhone to your PC, then launch iTunes. Click your iPhone when it appears in the top right corner of the screen, then select the Info tab from the iPhone Summary screen. If you are currently synching your contacts over iCloud, open the iPhone's Settings menu and move the Contacts slider from On to Off. Then head back to iTunes and enable Sync contact, selecting Google from the drop-down list. Sign into your Google account and your contacts are uploaded to Google.

Signing into Google on your Android handset will make accessible the same contacts as on your iPhone.

Calendar

Migrating your calendar data is easy, and especially so if your iPhone calendar is synched with Google Calendar or another webmail provider such as Hotmail. You simply need to sync your new phone calendar with that online account.

If you created your calendar on an iPhone and it is stored locally, go to Settings, Mail, Contacts, Calendars. If you have an existing Google account with which you are going to sync your Android phone it may be listed here already; if not, hit Add Account and fill in the details. Once you can see the relevant Google account, tap it and ensure the Calendars slider is set to On. When you sign into Google on your Android phone your calendar will sync.

If your calendar is created on your iPhone and stored in iCloud you may need to purchase an Android app to help with the transition. SmoothSync for Cloud Calendar costs a couple of quid and will sync your calendar from iCloud.

Music

Any music purchased on your iPhone should have already been synched with your PC or laptop. These files will be compatible with Android without conversion.

One of the great things about Android is that your phone appears on your PC like a storage device. Drag-and-drop music files to it and Android will do the rest. You can also purchase music on your Android device from whichever download store you choose.

You can also sign up to Google Music to transfer your files (see tinyurl.com/c7zkvd2 for a step-by-step guide).

Photos

Moving photos from iPhone to Android is a similar story to that of moving music files, but with one significant difference. Back up your video and photo files from your iPhone to your PC and you can drag-and-drop them
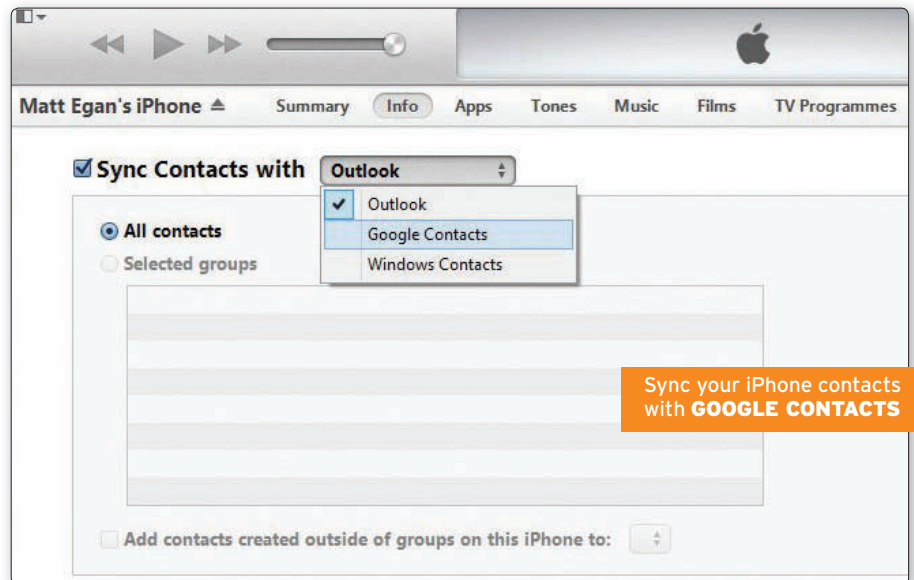
to your Android phone. Photos will be viewed in much the same way as on your iPhone. Videos you have ripped from DVDs or captured yourself will also play, although you may have to install a third-party player app.

But videos purchased from iTunes are unlikely to play due to digital rights issues.

Android is host to multiple video services, including Google Play Movies & TV, Netflix and BBC iPlayer. But Google's own media store is nowhere near as well stocked as iTunes in the UK at this stage. Check that your particular handset can install all these apps if you need them.

Sync your iPhone contacts with **GOOGLE CONTACTS**

How you go about transferring an **iPHONE CALENDAR** depends on your current setup

E-books & magazines

E-books in all formats for which there is no DRM will transfer across easily. Simply back them up to your PC, attach the Android phone and drag-and-drop them across.

Most people read digital books and magazines on phones and tablets via apps such as Kindle, iBooks, Zinio and Newsstand, however. The availability on Android of your preferred service dictates whether you can move across books and magazines.

On Android the Kindle app works perfectly. Install the app, sign in and your books are ready to download. On recent Android OSes you can also install Google Play Books. Any books you purchased through iBooks are gone, though. You need an iPhone or iPad to read them.

It's the same story with magazines – you can read *PC Advisor* on Zinio and Magzter as before, but issues you bought on Newsstand aren't available to your Android phone. Instead you can subscribe to our magazine via Google Play Magazines.

If you have an existing subscription it's worth asking the provider what your rights are, but we suspect you will be unable to port a subscription from one device to the other. In this scenario the best-case solution may be a refund if you're part-way through the subscription. ⊠

PAUL
MONCKTON

YOUR QUESTIONS ANSWERED
Expert computing advice
We tackle readers' hardware and software conundrums

MONITOR CONNECTION PROBLEM

Q I have a DisplayPort KVM switch that I want to hook up to a 30in Dell monitor with a 2560x1600-pixel resolution. Unfortunately, this monitor has only a DVI input. I bought a DisplayPort-to-DVI adaptor, which claimed to support Dual-Link mode, but when I plugged it in I couldn't achieve the full resolution of my monitor. Is it possible to connect DisplayPort to DVI in this way or could there be a problem with the adaptor?

It is possible to connect a DisplayPort output to a DVI monitor input via an adaptor, but the vast majority of available adaptors don't support Dual-Link DVI. This means they will be limited in the maximum resolution they can display. This will often be somewhere around 1920x1200 pixels, which is fine for most monitors, but not for large displays such as yours.

We've found that many such adaptors that claim to support Dual-Link DVI do indeed feature a Dual-Link connector, meaning you can physically plug in a Dual-Link DVI cable, but don't support Dual-Link mode. It sounds as though this is the case with your adaptor.

To properly support conversion between DisplayPort and Dual-Link DVI, the adaptor must be 'active' and will require an external power source to drive its internal electronics. This is usually achieved by fitting a USB connector to the adaptor, which can then draw power from a spare USB port on your PC.

Dual-Link DVI in effect uses two simultaneous lower-resolution DVI connections to transmit the high-resolution picture data, whereas DisplayPort uses a single high-bandwidth connection. The adaptor has to deal with converting the image data between these two formats, rather than simply connecting wires to different-shaped connectors at either end of a cable.

These additional features make true Dual-Link adaptors considerably more expensive: Apple's version, for example, costs £70. User reviews at store.apple.com have reported some reliability issues. Dell also makes an adaptor, the Bizlink XT625,

MONITOR CONNECTION PROBLEM

which may be a better match for your particular monitor. You should be able to buy one for around £40.

LOCAL BROADBAND DETAILS

Q I'm considering changing my broadband provider as my ISP has recently been bought by a large corporation of whom I don't wish to become a customer. How can I find out what services are available, specifically fibre-to-the-cabinet (FTTC) ones, from my exchange without having to individually contact all the providers?

You can discover a wealth of useful information on broadband availability from your exchange by visiting samknows.com. Select 'UK Broadband Availability' in the menu on the left, then click Exchange Search. Enter your town name, postcode, phone number or official exchange code to locate your exchange within the system.

The site will then provide detailed information about the broadband services in your area. You can see whether FTTC services are available, as well as a list of ISPs enabled at the exchange.

ADDING USB 3.0 TO MY MINI PC

Q I'm thinking of buying one of Intel's new Next Unit of Computing (NUC) systems to use as a small, low-power

LOCAL BROADBAND DETAILS

Tech Help

ADDING USB 3.0 TO MY MINI PC

media-centre PC. I want to use a large external USB drive to store recorded TV shows and such like, but I'm concerned by the lack of USB 3.0 ports on either of the available models. One of the NUC systems offers a Thunderbolt port, which I've heard can support USB 3.0 via an adaptor, but I've not seen any available. Is this possible?

Thunderbolt can technically provide you with USB 3.0 ports via an adaptor, but currently available solutions are rather more complex and expensive than you may be expecting. Simple Thunderbolt-to-USB 3.0 adaptors are not yet available, but you could buy a Thunderbird docking station with built-in USB 3.0 ports.

One example is the Matrox DS1/HDMI Thunderbolt docking station (See our review at tinyurl.com/avaLb8x), which takes a single Thunderbolt input and provides a selection of outputs, including HDMI and USB 3.0, audio jacks and an ethernet connector.

You could connect your mini PC, TV and external drive by hooking them all up to the docking station. Or you could directly connect the TV to the PC's HDMI port and use the docking station only for USB 3.0. Being a docking station, it's much larger than a simple adaptor, but also much more flexible, thanks to additional ports. The Thunderbolt version of the NUC PC lacks a wired network connection, so this could be ideal if you also wanted to use ethernet.

An alternative product soon to launch is Belkin's Thunderbolt Express Dock. This device has three USB 3.0 ports and a FireWire 800 connector, but lacks the HDMI output so you would simply use the HDMI port on the PC itself.

We've reviewed a range of mini PCs in our group test starting on page 62.

DO I NEED DISCRETE GRAPHICS?

Q My ageing Dell Dimension desktop PC has a pair of AMD Radeon X1300 Pro graphics cards with 256MB of video RAM. These have provided adequate performance for playing Ultima Online. I have been looking at getting a modern laptop for some time, but this doesn't need to be used for gaming as I also have a PlayStation 3. The laptop will mainly be used for watching HD movies, streaming video from YouTube, playing simple Flash games on Facebook and perhaps some modelling in Blender (I can switch to the desktop PC for rendering). Will I be able to get by with Intel's integrated HD Graphics 4000 chip, or will I need a discrete graphics card for my laptop?

RECOVER ACCIDENTALLY DELETED FILES

If you've ever accidentally deleted photos from your digital camera's memory card, it can be easy to retrieve the lost image – provided you immediately stop taking photos.

Many free file-recovery applications are available, such as UndeleteMyFiles Pro (seriousbit.com) or Recuva (piriform.com). These programs rely on the fact files aren't usually physically expunged from your memory card or hard drive when you delete them. The data is left in place, but the system marks the space they occupy as usable for new files. It's not until a new file is written to the same place on the storage medium that it becomes overwritten and physically lost.

Data-recovery software can examine all the areas on your drive marked as empty and work out what used to be there. If a complete file can be found it can reconstruct it as though it had never been deleted. With some file types, such as images, the software will attempt to recover as much of the picture as possible, even if sections of it have before permanently lost.
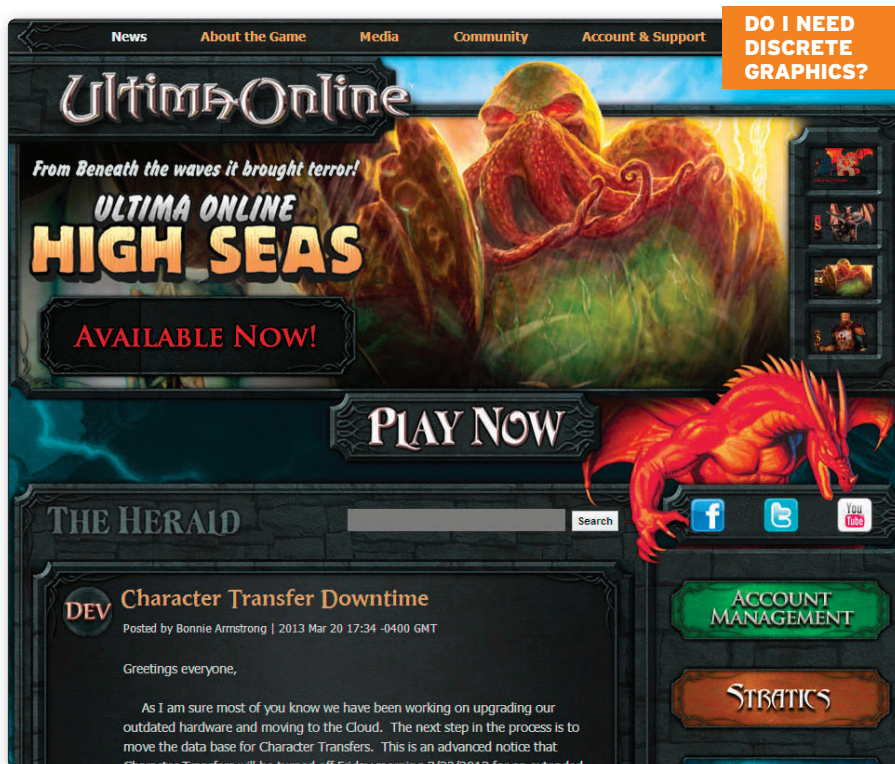
To retrieve lost files with Recuva, download and install the software – on a different drive to the photos – then launch the app. If you have only one drive, consider temporarily placing it in an external drive caddy and running the recovery process from a different computer.

When you start Recuva, you can speed up the process by telling it the type of files you're looking for, or you can select Other to search for all deleted files.

Next, you can select where you want the software to search. We picked 'Only removable drives' to scan a memory card.

Click Start and the software will return a selection of recoverable files. Select those you wish to recover, then click the Recover button. The app will ask you for a save location – again, make sure you use a different physical drive to the one from which you're attempting to recover data.

DO I NEED DISCRETE GRAPHICS?

The VPN connection settings are usually saved in a single file that you can simply copy from the old hard drive to the correct location on your new laptop. The VPN connection should then work correctly. You can also use this method to deploy a pre-configured VPN to multiple PCs.

First make sure you have permission to access all system files on the old hard drive. Also check hidden and system files are visible in Windows Explorer.

On the old laptop navigate to the profile folder for the user who had the VPN installed; inside this folder locate \AppData\Roaming\Microsoft\Network\Connections\Pbk\.

This folder should contain the file 'rasphone.pbk', which contains your VPN details. If you copy it to the corresponding folder on your new laptop, the connection should work correctly.

If the VPN connection from the old laptop was set up for all users rather than an individual user, you will find the rasphone.pbk file in C:\ProgramData\Microsoft\Network\Connections\Pbk.

From what you've described, Intel's integrated graphics would be more than ample for your needs. The HD Graphics 4000 will accelerate video playback and enable you to watch HD video content with smooth framerates. Most Flash-based games will also run fine on integrated graphics, which only start to struggle when faced with more complex 3D-modelled environments.

You can run Blender on an HD 4000-based system, too, although it won't be as fast as on a system with a dedicated GPU. However, your Radeon X1300 cards are now so old that you should find Intel HD Graphics 4000 considerably faster.

Be aware that not all Intel processors incorporate HD Graphics 4000. You will need to buy a laptop with an Intel third-gen Core processor (Ivy Bridge). Unlike their desktop counterparts, the mobile Core i3, i5 and i7 chips all include HD Graphics 4000.

WHICH MONITOR CABLE?

Q I have a late-2003 Power Mac G5 (970) with a 2GHz dual-core processor. It is running Mac OS X 10.5.8, and has 6GB of RAM and a Radeon 9650 graphics card with 256MB of video RAM. My new LG 21.5in monitor has a DVI-D socket, plus VGA and HDMI. Which of these connections would be the best option for hooking up the monitor to the PC? Although I know the monitor has a DVI-D connection, I am not sure whether the graphics card does.

The DVI-D port would be the best choice for connecting your monitor as it's a digital connection, which should provide the best picture quality. It also means you won't have to perform any adjustments on the monitor, automatic or otherwise, to align the image.

Your Mac's spec suggests that it does have a DVI port, so a DVI-D cable will fit.

RETRIEVING OLD SETTINGS

Q I'm attempting to configure a virtual private network (VPN) connection to my university on my new laptop. I can't figure out what settings I require. Can these be obtained from my old laptop's hard drive, which is being used in a caddy as an external drive? I think I need the VPN connection URL, but I already have my username and password. None of my University setup guides seem to be working, which is why I want to retrieve the working configuration from the old hard drive.
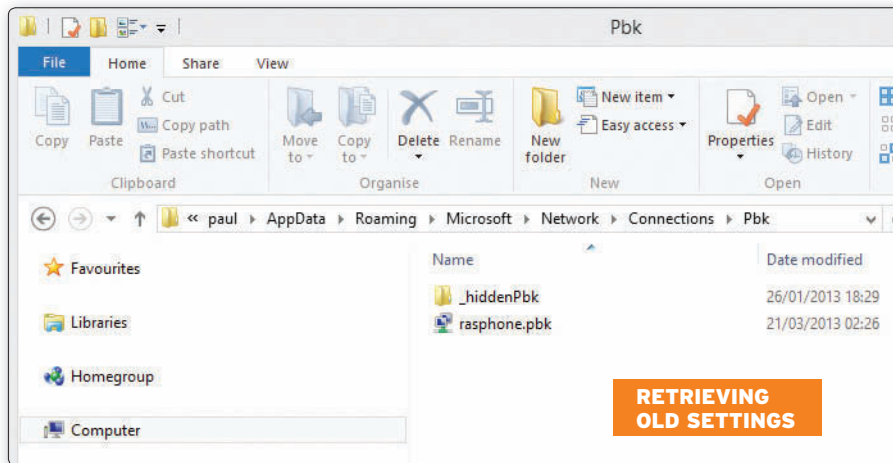

WHICH MONITOR CABLE?

DUAL-BAND WI-FI & MY PRINTER

Q I am currently accessing my printer from a Dell desktop over a wireless connection. This is set up via an old Netgear router and a print-server device that under Windows 7 doesn't work to my satisfaction. I am planning to buy a Canon printer with built-in wireless networking, plus a Netgear 802.11ac router that runs dual bandwidths simultaneously. As the printer supports only 802.11b/g/n, will it force the router to run at the lower bandwidth? If so, would this impact my connection speed?

As you're aware, 802.11ac routers use a 5GHz frequency, whereas 802.11n can operate over 5GHz or 2.4GHz, with 2.4GHz being by far the most common.

The key feature of Netgear's 802.11ac router is its support for dual-band operation, which means it can simultaenously operate at both 5GHz and 2.4GHz. In practical terms, this means the router can create two separate wireless networks: one for 802.11ac and another for 802.11n.

Because they use non-overlapping frequency bands, these two networks won't interfere with each other. This means 802.11n devices on one network won't slow down 802.11ac devices on the other. They will, however, be able to communicate with each other – and this is the job of your router, to route data from one network to another, whether it be between networks in

RETRIEVING OLD SETTINGS

MOUSE CONFUSION

Q I've recently bought a new mouse for use with my Android-based Smart TV stick, but I'm not happy with it. I find I have to move this mouse very large distances – sometimes as much as 10in to cover the screen – so perhaps I need a bigger mouse mat. I keep having to pick the mouse up, move my hand, and then put it down again to continue dragging the cursor. I have been told to purchase a laser- rather than optical mouse – what is the difference? I've also seen DPI settings quoted, and some mice let you switch between 800- and 1600dpi – what does this mean?

your house (including the wired network) or between your PC and the internet.

Theoretically, the choice of Wi-Fi network type should have no impact on your internet connection speed, because your home network should be capable of much higher speeds than your broadband connection.

However, if you have a super-fast broadband connection and a poor Wi-Fi signals in your house, it may be possible that your home network is holding back your broadband speed. This should happen only with the very fastest speeds available and very poor wireless connections between your devices. In this case a faster router is likely to improve your broadband speeds.

You don't say what sort of broadband service you use, but if your router incorporates a modem then it's worth checking before you buy to ensure the new router works well with your broadband service (note that the Netgear R6300 doesn't have a built-in modem, but the D6300 does). The performance and connections speeds of a broadband connection can vary depending on the router you use, independently of any wireless configuration. If possible, take a look in the user forums of your ISP. If your modem is in a separate external box then you shouldn't need to worry about this aspect.

DUAL-BAND WI-FI & MY PRINTER

TECH JARGON BUSTER

THUNDERBOLT: A computer interface that allows high-speed connections between peripherals. It uses a Mini DisplayPort connector, and combines the capabilities of DisplayPort, PCI Express and DC power over a single cable. Current versions allow data throughput of up to 10Gbps per device.

MEGAPIXEL: A collection of a million pixels or picture elements. These are the individual coloured dots that represent a digital image – the more of them you have within an image, the higher its potential resolution becomes.

Camera sensors with many megapixels are often able to capture more image detail than those with fewer. Be wary of assuming that more megapixels means better-quality photos, though. Cramming more pixels on to the same-size sensor usually reduces quality; the lens also plays a big part in quality.

STREAMING MEDIA: This refers to media content, typically audio or video, which is delivered to the user at the time they are consuming it, rather than being downloaded beforehand. This offers the advantage of being able to start enjoying the digital content almost immediately, and also means no complete copy of the content is downloaded to the user's device. A disadvantage is that the connection with the streaming service needs to be maintained at all times.

FTTC: Fibre-to-the-cabinet typically refers to a broadband connection that uses high-speed optical-fibre cabling between the local exchange and a cabinet in the street close to the user's premises. The connection between the cabinet and the customer then uses copper wiring. This results in much higher potential web speeds. BT Infinity is one such service, offering download speeds of up to 76Mbps.

BITRATE: The speed at which bits – or units of binary information – are transferred or processed over time. For audio data it can be thought of as analogous to resolution for image files. The greater the number of bits per second, the more detailed and clear the audio. In video it doesn't affect the resolution in terms of the number of pixels in a frame, but it does affect how frequently and accurately they are updated. A low bitrate usually manifests itself as blurry or blocky video with unwanted visual artefacts.

ANTI-POOPSOCKING: Poopsocking refers to the phenomenon whereby a user becomes so engrossed in an activity such as online gameplay that they prioritise the game over all other functions, such as visiting the toilet. Anti-poopsocking forces the player to periodically stop playing, perhaps by requiring them to wait for a response before proceeding in the game.

MOUSE CONFUSION

It's simple to adjust your mouse's sensitivity to movement. Open the Windows Control Panel, click on Mouse, then select the Pointer Options tab. In here you can select the mouse speed by moving a slider left or right. The box marked 'Enhance pointer precision' can also be ticked to enable an acceleration function, which makes slow cursor movements slower and fast movement faster. This makes small, slow movements easier to perform accurately, but can make response during gaming difficult to predict.

We don't know the specifics of your Android device, but you can usually adjust the pointer speed by opening the Settings menu, selecting 'Language and input', then locating the Mouse/trackpad section. You should find a similar slider for pointer speed.

Increasing the pointer speed will reduce the amount of physical movement you have to make with the mouse to move the cursor from one side of the screen to the other.

The DPI rating or setting on a mouse determines how accurately the mouse can detect small movements. A high DPI rating means smaller movements can be measured, but it also has the effect of speeding up the cursor movement onscreen. You may find you need to reduce the pointer speed to keep under control the cursor. High-DPI mice are beloved of gamers who want to be able to quickly and accurately spin around their in-game character with minimal movement of the hand.

With regard to laser versus optical technology: both technologies are optical, but a laser mouse uses a laser rather than an LED (used by standard optical mice) to illuminate the surface below. This can allow for more accurate surface tracking and even allows some models to work on glass, reflective or patterned surfaces with which standard optical mice may struggle. Typically, a laser mouse will not produce a visible glow from the underside. ⊠

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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.

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Faster startup for your Windows PC

Roland Waddilove shows how to use Autoruns to discover which apps are auto-starting with Windows and diagnose any problems

The Windows desktop looks relatively straightforward, but behind the scenes are numerous running programs. These processes, for your security software, messaging client and more, will usually quietly get on with the task at hand and not give you any cause for concern.

However, all sorts of programs will by default start with Windows, and the more apps you install the more time you'll be left waiting to get into your PC as an increasingly bloated Windows takes longer and longer to load. An old PC can take several minutes to get to the desktop, whereas a new machine needs just 30 seconds or so.

Of course, adware, viruses, spyware and other undesirables can load with Windows, too. If your PC is slow to boot or you suspect that it might have some form of malware infection, the first place to look is the list of items that automatically run at Windows startup.

You may already be aware of Windows' built-in msconfig utility and know how to use its Startup tab, but you may not realise its limitations.

A much more powerful tool is Autoruns. This free utility provides the most comprehensive list of startup items of any software. You will be amazed at the number of programs, services and other things that automatically load when Windows starts. The only snag is the sheer amount of information can make it a bit daunting. Don't be put off.

Here we'll show you how to view your startup items and find out whether they are malicious. You should compare this list before and after installing new software to see what has changed. A companion utility called Process Explorer can provide further information about startup processes if needed.

Autoruns itself can't speed up your PC, but it can help point out the bottleneck. It's then up to you to work our a solution. For example, you might choose to disable or uninstall the worst-offending apps, or consider replacing them with less resource-heavy programs.

Download Autoruns from tinyurl.com/2d8a7qt. Unzip the file, then right-click the setup file and choose Run as administrator.

MAKE WINDOWS START FASTER WITH AUTORUNS
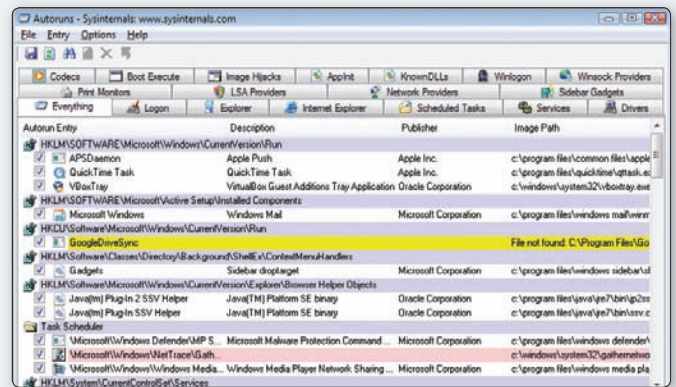
START Autoruns lists everything that loads with Windows. Any entries highlighted in yellow refer to files no longer on the disk, so you can clear the box beside them. Changes are instantly applied. Removing these from the boot process should speed things up.
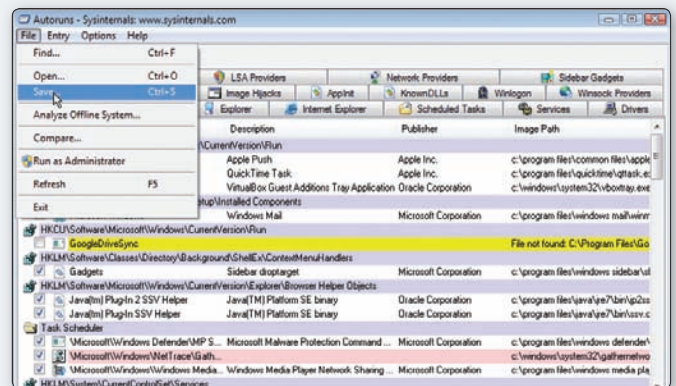
4 Before you next install some software, save a copy of your startup list. Launch Autoruns, let it scan the PC, then select File, Save. This saves a copy of the current startup list and enables you to compare future startup lists to see what's changed.
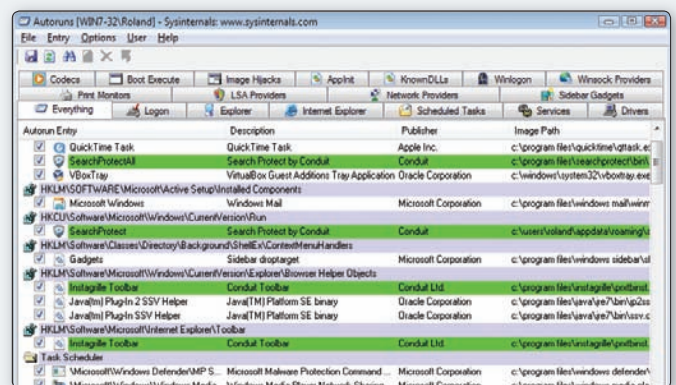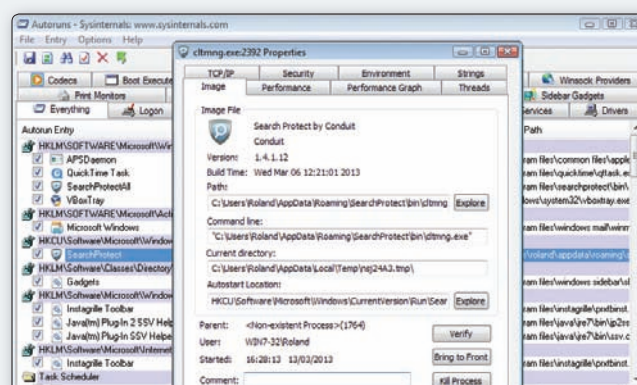

7 After uninstalling the programs, Autoruns compared the startup list to the original list. It is evident that the uninstallers weren't able to remove everything – this is how Windows becomes bloated. You may need to manually remove some files.

Tech Help

2 It isn't always obvious what process an entry refers to or whether Windows requires it to boot up. Select an item to see useful information in the panel below; right-click it to search online for further information.
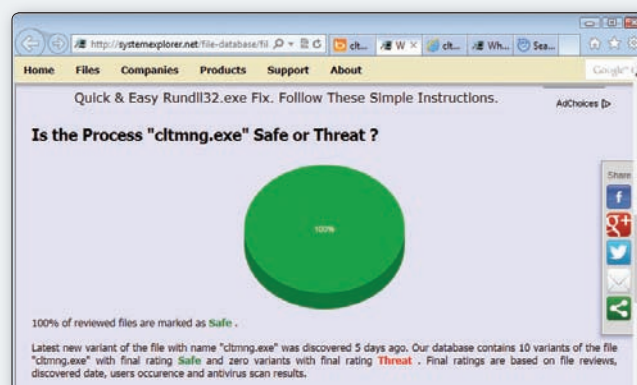

3 Browse the search results and you should find references to the unknown file. These sites will help you determine whether it is a safe or potentially malicious file. The one in our example is safe, but check any entries that look suspicious.

5 Having installed some new software, launch Autoruns and select File, Compare. Choose the file you saved earlier and examine each tab for entries highlighted in green. These are new additions and will cause Windows to start more slowly.
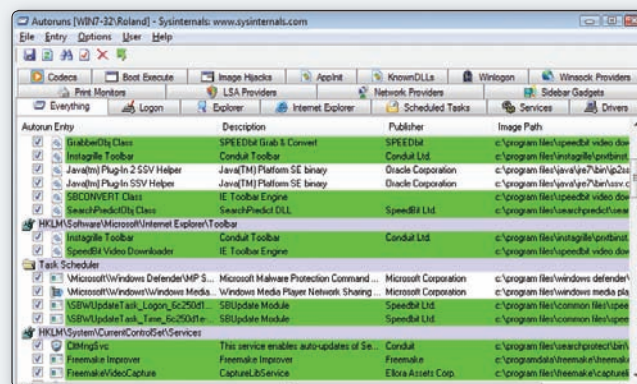
6 After installing just two programs, Autoruns' Compare feature reveals large expanses of green. These are extra items that Windows has to load on startup and the more there are, the slower it will get. Try to avoid software like this, if you can.

8 Right-click an entry in the startup list and select Process Explorer from the pop-up menu. This is a separate software utility; if you download it and run it on its own it looks like this. Launch Process Explorer, then minimise it out of view.

9 Now, when you right-click an entry in the startup list and select Process Explorer, a Properties window can help you to identify an unknown item that may or may not be malware. A Kill Process button stops it running. ⊠

Automate online tasks with IFTTT

IFTTT can automate many of your regular online tasks and help to free up your valuable time. David Bayon explains how to get it up and running
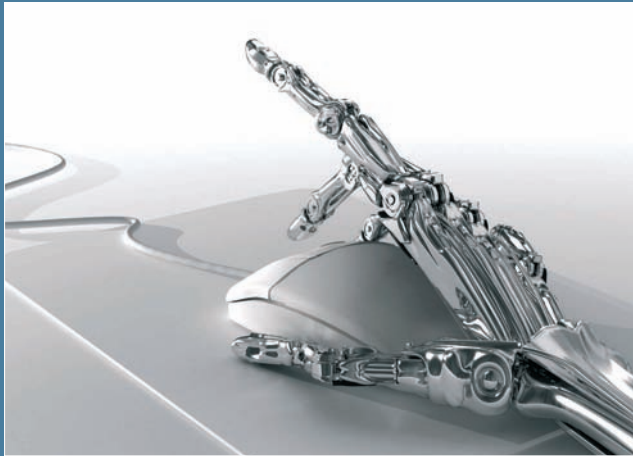
There are so many useful sites and services on the internet that it can be a struggle to keep track of them all. Just keeping up with social media can mean updating Facebook, Twitter, Google+, LinkedIn, Pinterest and countless other smaller services. If only there was some way to add an element of automation to it all...

Step forward IFTTT, pronounced 'ift' and short for 'IF This, Then That'. This wonderful free service exists to make your online life easier by automating any task you regularly perform across a wide range of applications and services. It's totally customisable, too, so you can use 'recipes' others have created or cook up your own.

IFTTT works in the same way as an IF statement in programming code. From the available channels (supported services such as Facebook or Twitter) you can set a trigger (that's the IF This part) and a resulting action (the Then That part).

One of the most popular IFTTT recipes watches for any change to your Facebook profile picture (the trigger), then automatically updates your Twitter profile picture to match (the action). You simply give IFTTT your Twitter and Facebook logins and it handles the rest on the fly.

IFTTT users have created some great recipes you can use. For example, you can send starred Gmail messages directly to Evernote, send Facebook photos you're tagged in to Dropbox, get an automated email if it's going to rain tomorrow, and duplicate your Instagram photos in a Facebook album. If you can think of something new, and the relevant services are among IFTTT's 59 supported channels, you can probably do it.

IFTTT can be incredibly useful even if you just stick to the existing recipes. You can configure a whole host of them in minutes, as we'll see in our walkthrough. But don't let yourself be limited by what you can see; with a bit of imagination (and almost no coding knowledge) you can set up a recipe for any task.

GET STARTED WITH IFTTT
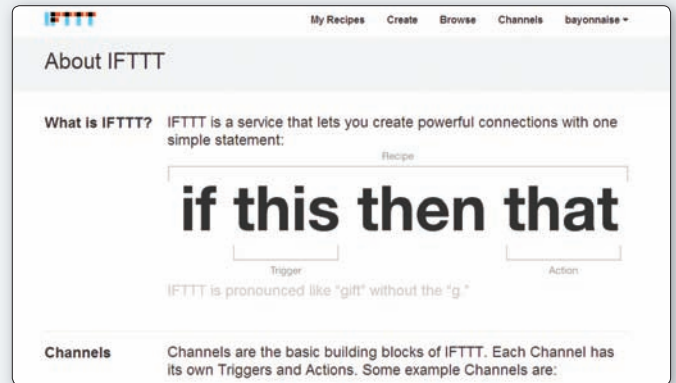
START Head to ifttt.com and create a free account. A Welcome screen explains how IFTTT works – we'd recommend you take a few minutes to read this and get a good idea of the service's capabilities.
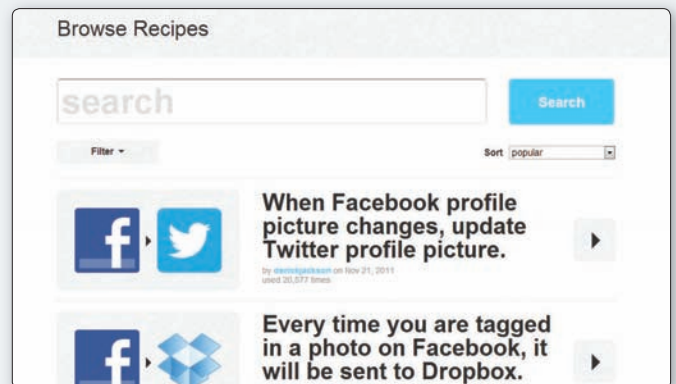
4 Once you've added channels for all the accounts you'd like to automate, click the Browse tab and see if some of your common tasks already have recipes. Change the sorting to Popular to view the most-popular recipes.
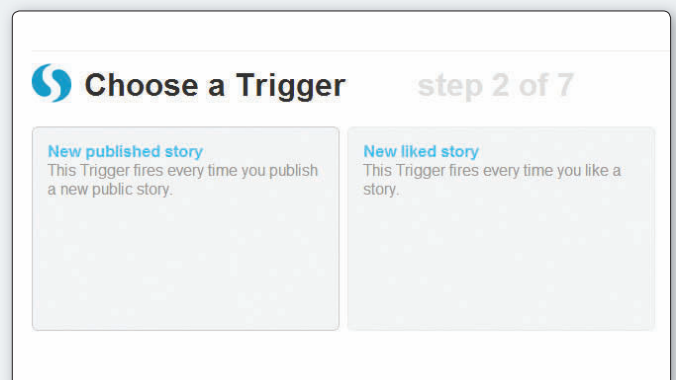
7 Say we use Storify to gather Twitter conversations, and we want to tweet whenever we finish a collection. Click Storify and log in if necessary, then choose 'New published story' and, as there are no parameters to add, simply create the trigger.
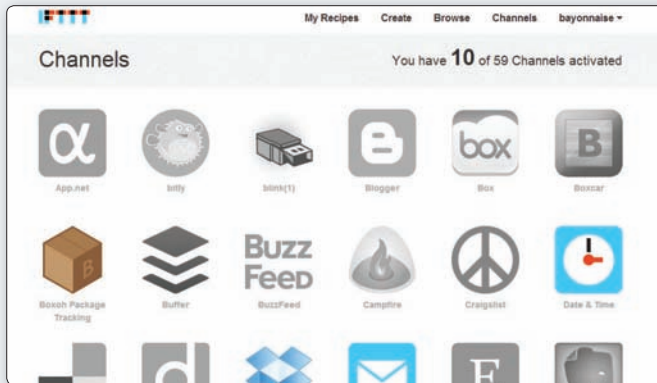
2 Don't click 'Create your first recipe' yet. Instead, click the Channels tab at the top, and you'll see all 59 supported services. You can use any of these in your recipes, but you'll need to have an account with some of them.
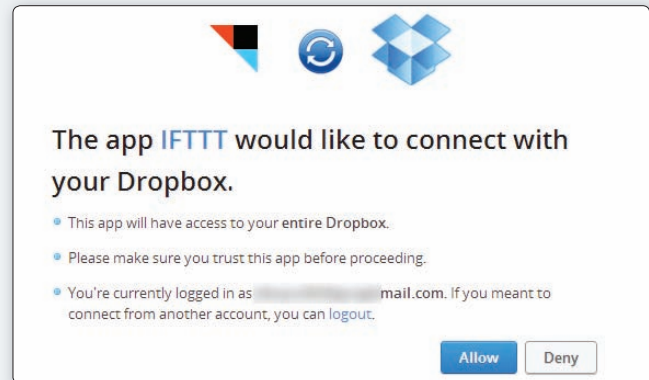
3 To activate, say, the Dropbox channel, simply click its icon, then click the Activate button, and follow the instructions to log in and connect Dropbox to IFTTT. The channel will turn from monochrome to colour, meaning it's ready for use in a recipe.
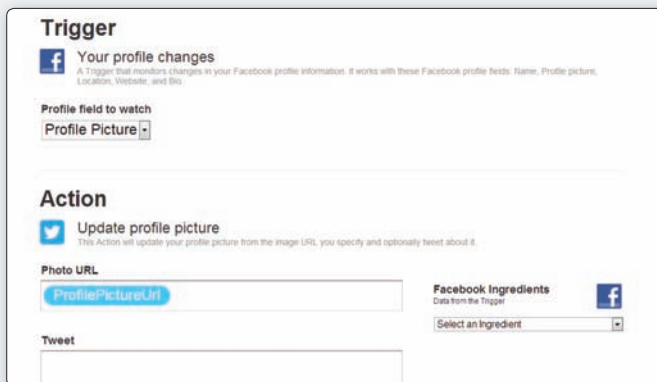
5 Pick one you like and click the arrow to enter its settings. Here you can see what the trigger is, and what action it will cause to happen. You needn't change anything here, just click Use Recipe and the task will be automated. It's that simple.
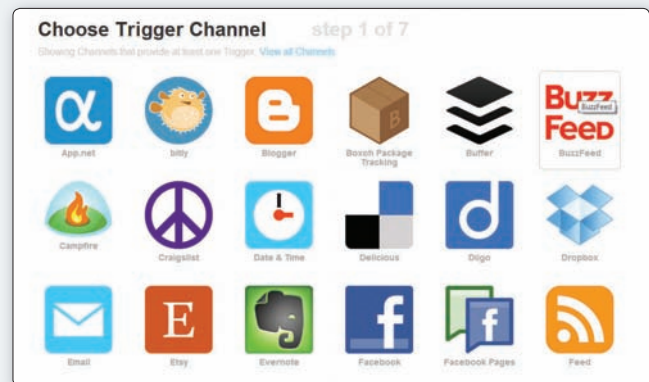
6 If you want to carry out a task that no-one else has thought of you'll need to create your own recipe. Click the Create tab, then click 'This' to bring up a list of trigger channels. Some channels are good for triggers, while others are best for actions.

8 For the action choose Twitter, then select 'Post a tweet'. By default the tweet will contain the title and URL of the Storify post, but you can also add the date or a description using the drop-down box on the right, or type custom text into the box.

9 And there's your personal IFTTT recipe, ready to go. Add a note to remind yourself and others what it does, then click Create Recipe. And that's it. You can apply that process to any task in the 59 supported channels. ⊠

Never miss a word

Now you can re-live any Skype conversation. David Bayon explains how to record a Skype call using free utility Callnote

Skype is VoIP software that lets you make free phone calls over the internet. Install it on your PC, laptop, smartphone or tablet and, provided your recipient is also signed into Skype, you simply click their username to initiate a video call. You can chat until the cows come home, without racking up a single penny on your phone bill. (Do note that data charges may apply if you do not have an unlimited broadband connection.)

It's not difficult to understand why Skype has become so popular in recent years. This free service can put you back in touch with long-lost friends and relatives now living in faraway lands, but it's so much more than a free call system. Able to also connect with landline and mobile phone numbers, with subscription and pay-as-you-go packages available, Skype could potentially replace your landline. It even has its own range of apps (see *Skype apps*, right).

If you are using Skype for all your phone conversations, more advanced requirements can also be catered to. For example, you may have cause to record a conversation for reference or legal reasons. In the following workshop we'll show you how to do this with a free app and the hardware you're already using. Be sure to warn the recipient you are recording the conversation before you try it, though.

To make and receive calls through your computer, you'll need a microphone to speak into and some means of hearing the response, whether that's a set of built-in speakers or a pair of headphones. Most modern laptops will have an integrated mic, speakers and a webcam. PC owners – and laptop users who want better-quality audio – might prefer to spend £15- to £20 on a decent USB headset with mic, such as the Microsoft LifeChat LX-3000.

Alternatively, if you want to replicate the traditional phone experience as closely as possible you can buy USB Skype handsets from as little as £10, complete with flexible cords and annoying ringtones.

You don't need any Skype credits to get started, and the free version of the Callnote app we're using here will suffice for our purposes.

RECORD SKYPE CONVERSATIONS USING CALLNOTE
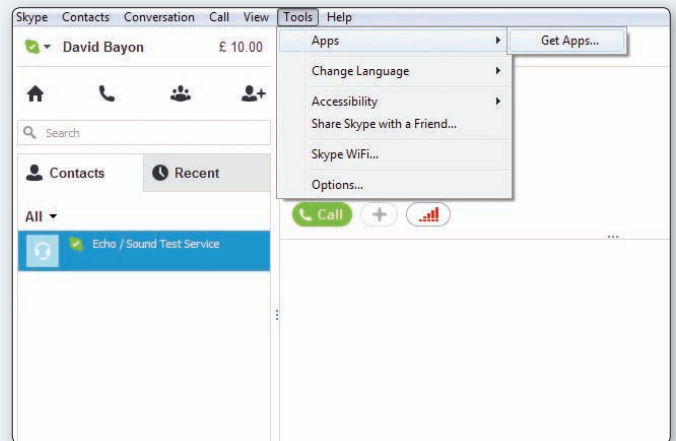
START Skype doesn't have its own recording facility, but it does have an app store that lets you bolt on a third-party tool that offers this functionality. Access the app store by clicking the Tools menu and choosing Apps, Get Apps.
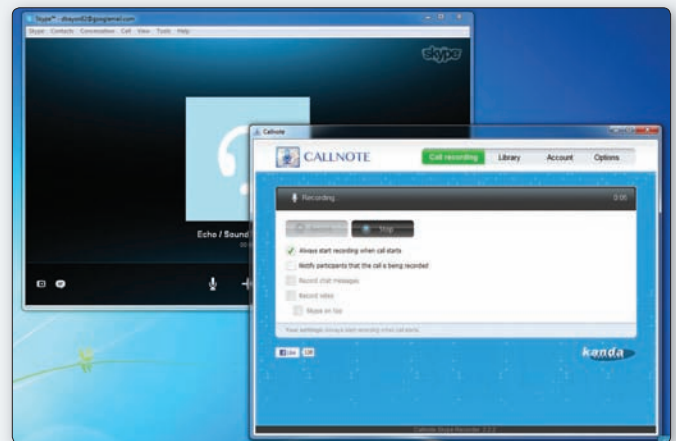
4 We'll use Skype's test call feature as a demo. It's best to start recording in Callnote before you initiate the call. Open Callnote's Call Recording tab, click Record, then start your call in Skype. Callnote can automatically record all calls and notify users about the recording.

SKYPE APPS

These days everything seems to have its own app store, and Skype is no exception. There are some useful tools to be had if you're a regular Skype user.

For conference calls, IDroo might prove handy. It's an interactive whiteboard that enables multiple users to visually brainstorm and collaborate on ideas. It lets you insert complex mathematical equations, and it works with Wacom graphics tablets, too, so you can scribble away with a stylus for maximum convenience.

Clownfish for Skype is a useful app for enhancing international text conversations. It aims to read what you type in English and
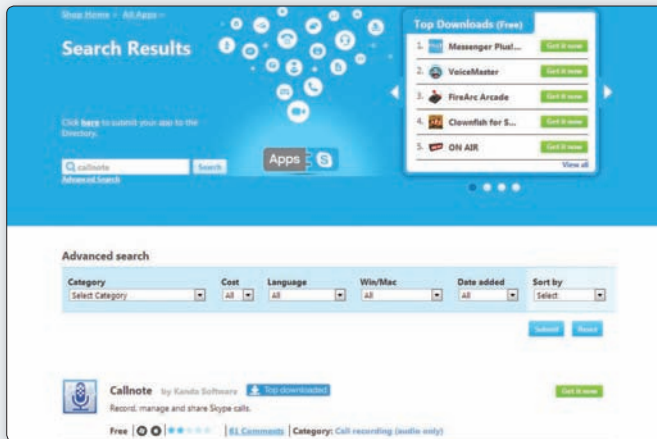
2 The app store will pop up in a new window. Type Callnote in the search bar, then click 'Get It Now' next to the standard version. Ignore the low user rating: many of the complaints concern a now-fixed error in the Mac version of Callnote.
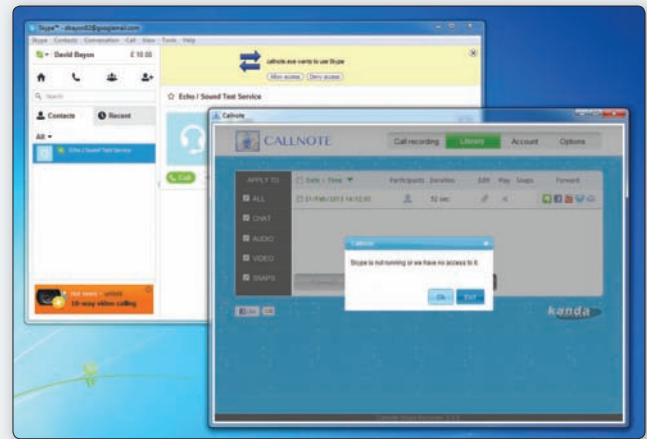
3 Download and install Callnote, then open both Callnote and Skype. After a few moments a message should appear at the top of Skype to say Callnote would like access. Click Allow Access. Ignore messages about registering Callnote Premium.
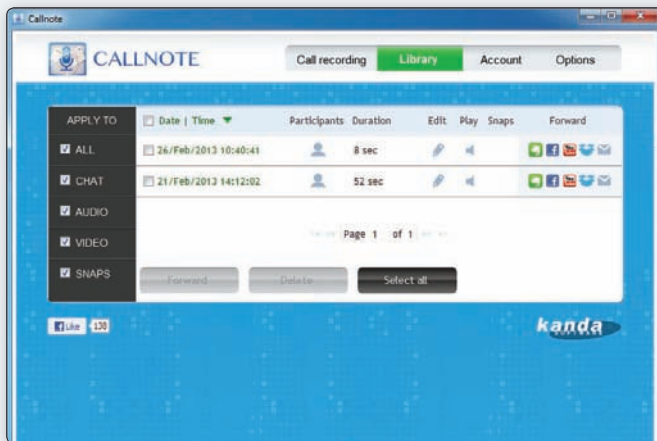

5 Recordings are stored in your Documents folder and displayed in Callnote's Library tab, ordered by date and time. You'll see the recipient and duration of the call, and you can play recordings and edit their stored text information.

6 One neat feature of Callnote is the ability to send recordings to Dropbox, Evernote, Facebook and YouTube. Click the Account tab and link your social-media accounts. You can also set up Callnote to automatically send recordings for safekeeping. ⌧

translate it into one of 44 other languages for the recipient. It's only as accurate as the current state of translation software, so don't expect a perfect bilingual conversation, but it supports text-to-speech and spellchecking in all those languages, and it's useful for getting your point across with minimal frustration.

Finally, music lovers will surely appreciate ON AIR, which broadcasts information related to the track you're currently listening to on your Skype online status for everyone to see. It can pull in track information from a whole host of popular media players, including iTunes, Spotify, Winamp and Windows Media Player.
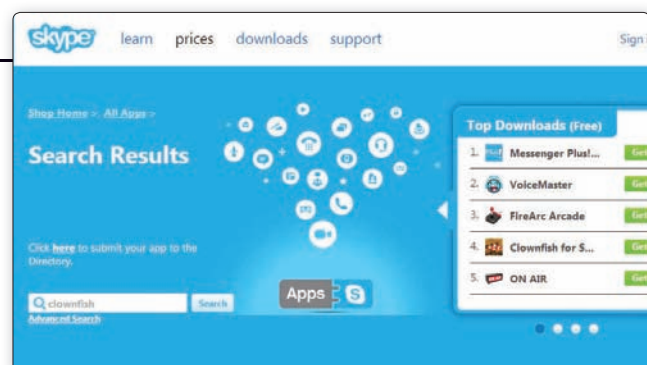
Touch up your photos with Snapseed

Tablets, phones and even some PCs have touchscreens. Jim Martin explains how to get started with Snapseed, a touch-based editor that that's supremely easy to use

Time was when only photo enthusiasts would edit their digital images. Everyone else would merely copy the contents of their camera's memory card to the PC and stop there, subjecting friends and relatives to mind-numbing slideshows of duplicate and out-of-focus snaps.

These days, your most-used camera is probably built into your smartphone, with photos immediately saved to a gallery and perhaps even sent via the cloud to your PC.

It couldn't be easier to share these photos. You can email them, attach them to an instant message, or post them on Facebook or Twitter with just a couple of taps.

Instagram and other apps have proved popular, but not all offer precise control over the editing of your snaps. These apps tend to offer quick fixes, slapping on predefined filters and rounding off the corners to replicate those photo prints you'd get from Boots in the 70s.

Should you want to go beyond these basic edits on a touchscreen device, one of our favourite tools is Snapseed. This Google-owned app is free for iOS and Android, and just a few pounds for Windows or Mac.

Snapseed is usable on a smartphone or tablet, although it's arguably easier to use on the latter due to the extra screen real estate.

As well as being able to apply vintage filters, you can crop, straighten and rotate your image, apply autocorrections and selectively adjust areas.

You have complete control over each adjustment, making Snapseed far more powerful than apps that offer only preset edits. You can change the strength of the effect, plus alter the brightness, contrast, grain and more.

Here we'll show you how to apply effects and make corrections using an iPad, but the process is much the same on other devices, too.

EDIT PHOTOS WITH SNAPSEED
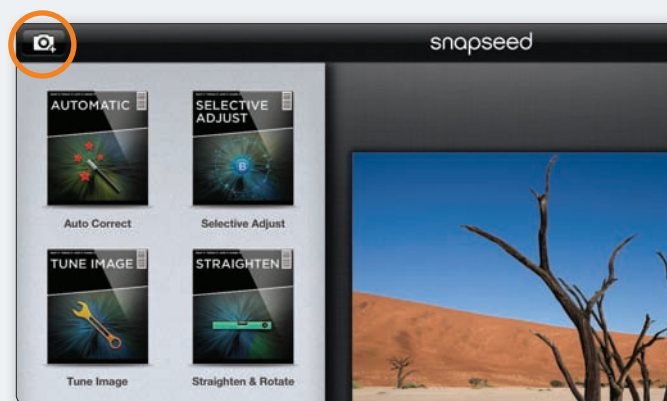
START Download Snapseed, then launch the app. To open an image tap the icon that shows a camera with a plus symbol. You can import a photo from your library, snap one using the built-in camera, or copy one from the clipboard.

4 Tap and hold Compare to see the original image, then let go to see the edited version. If you're happy with your changes tap the Apply arrow at the bottom right; if you preferred the original, tap the Back arrow to exit the tool without saving your changes.
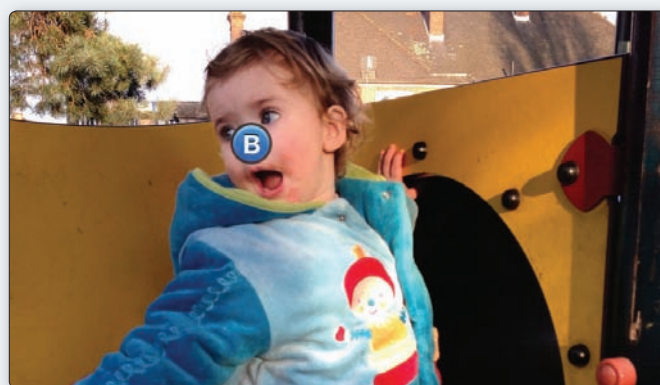
7 The Selective Adjust tool lets you alter the brightness, contrast and saturation in specific areas of the image. Tap the + button to place a marker somewhere on the image, then pinch to resize its reach. Make and apply your adjustments as normal.

Tech Help
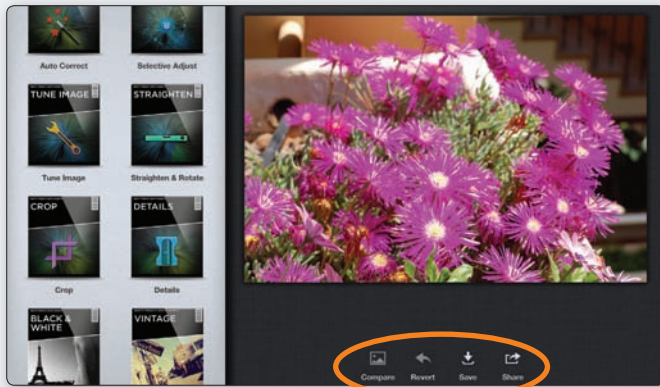
2 Snapseed's editing tools are on the left, with the image on the right. Below this preview on the iPad are four buttons: Compare (shows the original), Revert (undoes all changes), Save and Share. On smaller screens tap and hold the image to view the original.

3 Tap the Auto Correct tool. Snapseed will optimise the contrast and colour settings, but you can manually override the settings by tapping and holding on the photo. Swipe up/down to choose the adjustment, then left/right to alter the effect.
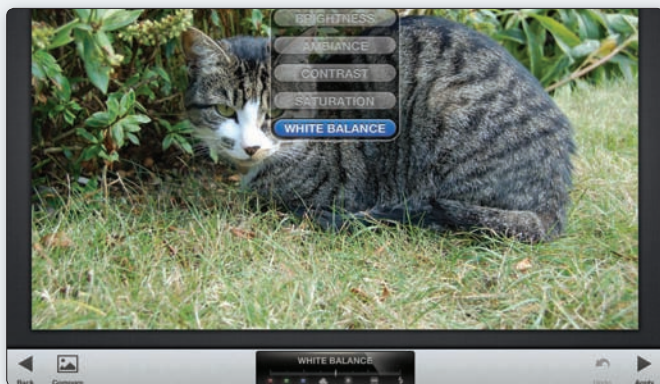
5 One of the tools you'll use most often is Tune Image. It lets you adjust the image's brightness, contrast, ambiance, saturation and white balance. With the latter, you'll see a handy guide at the bottom showing the various lighting types.

6 Sharpen photos using the Details tool. Tap the magnifying glass (Loupe) and drag it on top of your image to zoom in and check the detail. You can then swipe right to increase the sharpness (swipe left to decrease it if you go too far).

8 Let's have some fun with filters. Tap Retrolux, then swipe up/down to select an image adjustment, and left/right to alter its value. Tap the Style (star) icon to choose a specific preset (tap Properties to customise it further), or Shuffle for a random effect.
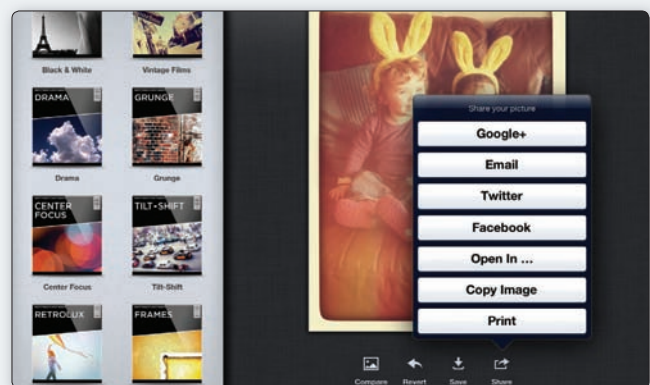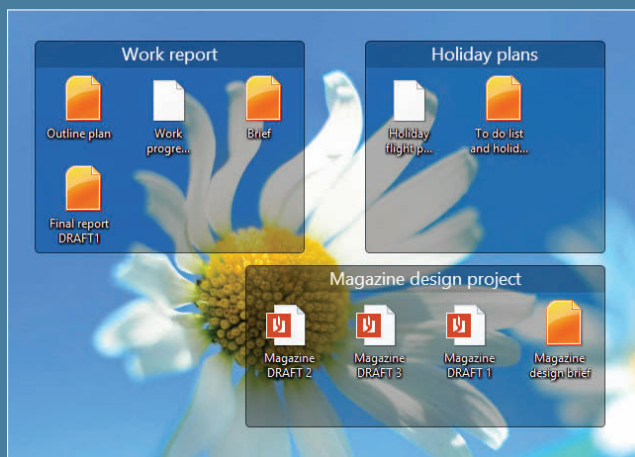

9 When you've finished editing a photo, tap Save to create a new photo at the end of your Camera Roll or Gallery. Tap Share if you want to email, post to Facebook, print or open the edited image in another app. ⊠

Tidy up your desktop

If your desktop is plastered with shortcuts, use StarDock Fences to organise your stuff and make things easier to find. Sandra Vogel shows you how

If your PC's desktop is anything like mine, it's plastered with shortcuts to your frequently used apps, favourite web pages and often-accessed files. You might even use the desktop to store files and folders themselves.

I try to group together similar items to make things easier to find, but it's not a particularly efficient method. Sometimes there isn't enough space to add a shortcut to an existing group, which means everything must be rearranged or resized. This is time-consuming and, unfortunately, Windows offers no way to save their positions.

Enter StarDock Fences. This brilliant utility lets you do all this and more.

In essence Fences creates small 'trays' on the desktop, into which you can put whatever it is you want to group together.

Perhaps you find yourself so frequently accessing three or four folders on your hard drive that you've created desktop shortcuts to them. Alternatively, you might be working on a project that

requires you to access many different files on a regular basis. Or you might like to group application shortcuts according to their type, such as games and productivity.

In these scenarios, Fences is a useful aid. Its drawers will allow you to keep together these documents and shortcuts in quickly and easily identifiable groups.

You can position the drawers wherever you want onscreen, and even stretch them across more than one desktop on a single PC.

Fences are easy to hide if they get in the way, and can be quickly reconfigured or repositioned. They are easily removed when you're done with them, too, and your original documents remain wherever they've been filed on your computer. New desktop icons can even be automatically sorted into an appropriate 'Fence'.

Fences is compatible with all versions of Windows from XP onward, although some features are reserved for Windows 7 and 8. It costs just £6 after a 30-day trial.

GET STARTED WITH STARDOCK FENCES
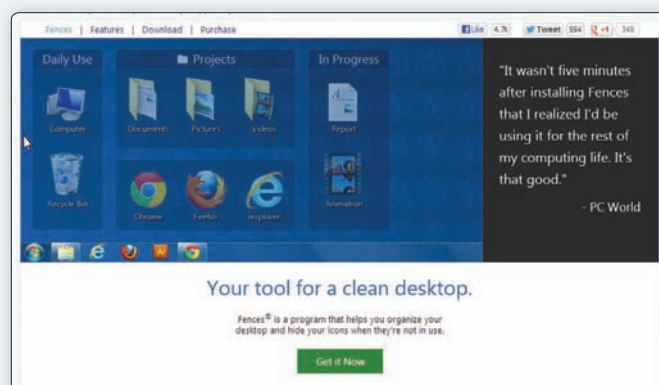
START Head to stardock.com/products/fences. Click Get it Now and choose the free version, which is a 30-day trial. You'll need to enter your email address, then click the link in an email to download the application. Follow the installation instructions.
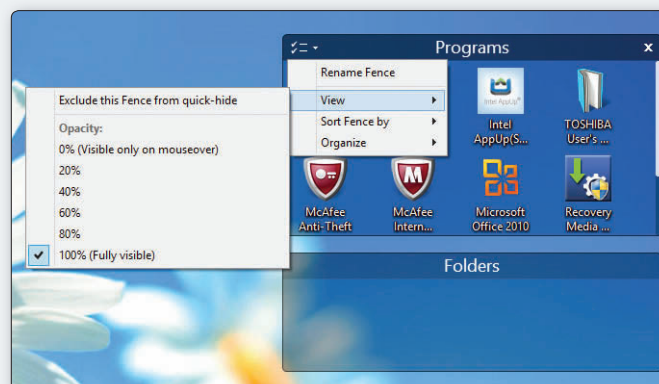
4 Drag a Fence to a new location or double-click outside a Fence to hide all Fences. If you want some to remain visible and others hidden, click the top bar of any Fence and from the menu choose View, 'Exclude this Fence from quick-hide'.
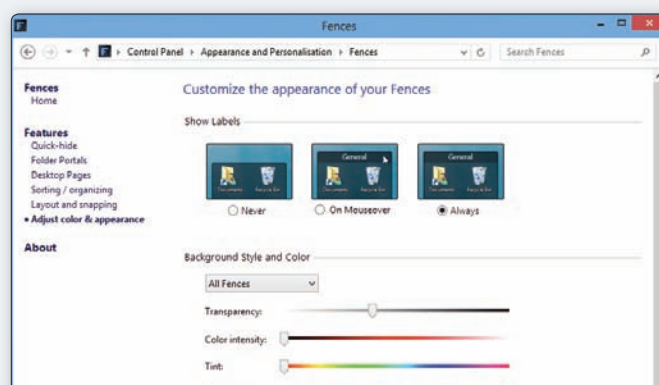
7 Fences adds a Control Panel option, which lets you customise the colour and transparency of some or all of your Fences, plus tweak other settings. You'll find it in the Appearance and Personalization area of the Control Panel.

Tech Help

**Start using Fences**
Apply a layout to help get me started

2 When the application first runs it can automatically set up some fences for you. If you already have some icons on your desktop, choose this option – it's easy to change and will give you a good idea of how Fences works in practice.


3 In our case three Fences were created – for Programs, Folders, and Files & Documents – and two of these were empty. Depending on what items and shortcuts you have on your desktop you might find more Fences are created.

5 Create a new Fence by drawing a rectangle onscreen and selecting 'Create Fence Here'. Give the Fence a name (you can later change this by clicking on its name), then drag to it icons from the desktop or folders on your hard drive.
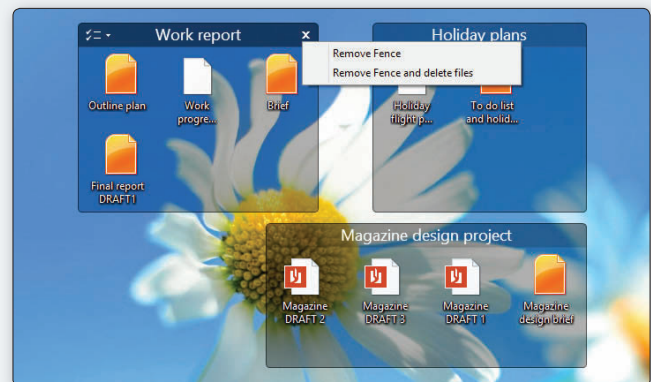
6 If you don't want any of the auto-configured Fences, or you no longer need a Fence you've created, click the X in its top-right corner. You can remove just the Fence or the Fence and any files inside. The first option returns the shortcuts to your desktop.
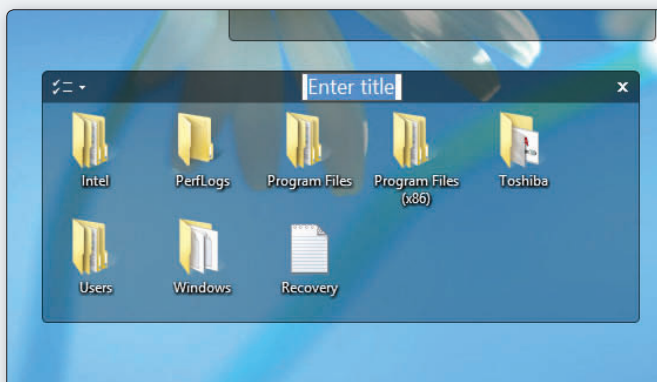
8 As well as holding individual apps and files, Fences can be portals to folders. Draw a rectangle on the desktop and select 'Create Folder Portal Here'. In the Explorer window choose a folder. You can rename the Fence after it has been created.

9 You can position Fences on top of each other if things start getting too busy. This system can be helpful, but it can also make items difficult to see. Alternatively, put the cursor to the edge of the screen and drag to create a new screen. ⊠

Business networking

You probably know Facebook and Twitter like the back of your hand, but LinkedIn is a different kettle of fish. Rosie Hattersley introduces the business social network

LinkedIn is a business-focused social network that works on the premise that personal recommendations are more useful than a beautifully crafted CV. If you're looking for a new job or the next step in your career, this form of networking can pay dividends.

You create a circle of business associates, and can then view and add to your network their connections, including anyone they single out for particular praise and endorsement.

Although only people to whom you're connected can view your full details, any LinkedIn member can see your name, job description, employer and profile photo, plus how many connections you have. Unlike Facebook, where some users have hundreds of 'friends' whom they wouldn't acknowledge if they passed them in the street, having many connections on LinkedIn is a good thing.

Employers like LinkedIn as it enables them to see what a person has done, rather than simply reading

the sanitised version provided on a CV. You may have held several key posts, but it's the projects and successes you chalked up along the way that will mark you out.

Via your associates, a potential employer can also get a better idea of what you're like to work with. This is where endorsements and personal recommendations can come in.

LinkedIn offers a number of options for extending your profile, including groups and organisations you can join and post to your Facebook and Twitter feeds. Participation and engagement may just give you the edge over rival candidates for a job.

Here we'll look at the most important element: creating a profile and establishing a LinkedIn network. Once your profile is complete you can start building up your LinkedIn network. Don't be afraid to invite everyone you've ever worked with or met professionally. You can also add your LinkedIn profile to your Twitter profile or CV.

GET STARTED WITH LINKEDIN

START Head to linkedin.com and enter your details. If you're looking for a new job you may prefer to use a personal rather than company email address, although you can also assign a secondary address. Check your inbox for a confirmation email.

4 The Dashboard view displays suggestions of people you might know, relevant job openings and more. The notifications at the top indicate pending connection requests and LinkedIn emails. First, though, you need to complete your profile. Click Profile, Edit Profile.

7 Keywords describing your skills and experience are very important. These tags will help people find you and are used for instant endorsements by your LinkedIn connections. Enter as many keywords as you wish.

Tech Help

2 Sign into your LinkedIn account. Fill in the basic profile details requested, including whether you are employed or looking for work. If your current company has a LinkedIn profile then its logo will appear next to your job description.

3 LinkedIn will request access to your email account so it can suggest connections. If you allow it access it will find any of your email contacts who are already using LinkedIn. Click Add Connection(s) to invite them to connect with you.

5 Enter details of how long you've worked at your position and click Save, then enter a description of what it entails. Repeat the process for other jobs you've had. Next add your education. LinkedIn will match what you type to items already in its database.

6 Next you should add a photo. Try to choose a face-on shot so people can see it's you, and save the party/holiday snaps for Facebook. Photos up to 4MB can be added. You can crop in before uploading the image, or do so once it's in the system.

8 Now you need to get networking. LinkedIn suggests people you may know, but you can also find colleagues by name. To connect with someone, click the person's name. A preview of the request page will appear. Select how you know the person.

9 You can add projects and flesh out details of achievements in your jobs list. You can also join professional groups. You'll probably want to manage messages from vocal groups in the Groups, your Groups, More, Your Settings. ⊠

LETITIA
AUSTIN

1-abc.net Password Organizer 6
FULL PROGRAM

Installation details
Go to My Computer. Right-click the disc icon and open the disc. Select Files 216\1-abc.net Password Organizer 6 and open the file

Online registration required: head to tinyurl.com/cbcdosj before 5 June 2013

System requirements
Windows XP/Vista/7/8

One of the most common PC problems is the accidental loss of data. We're told to back up all our data, but it's a time-consuming process. Many of us will therefore skimp on the frequency of our backups, or the number of files they include. But when something goes wrong, it's behaviour we'll regret.

1-abc.net Backup is an easy-to-use program that automates the backup process. It isn't overloaded with rarely used tools that will slow down your machine, making the prospect of creating a backup seem much less of a chore.

1-abc.net Backup lets you add to a backup as many files and folders as you wish. You can schedule full and incremental backups down to the minute, then simply let the software get on with the hard work on your behalf. ⊠
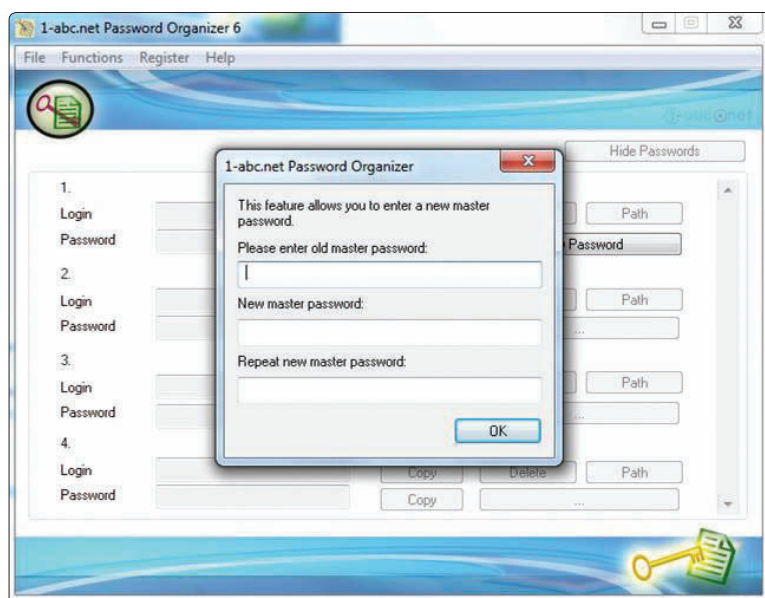
iolo System Mechanic Pro 11.5
FULL PROGRAM (SIX-MONTH LICENCE) AVAILABLE ONLY ON THE DISC+

Installation details
Go to My Computer. Right-click the disc icon and open the disc. Select Files 216\iolo System Mechanic Pro 11.5 and open the file

Online registration required: follow the links during installation before 5 June 2013

System requirements
Windows XP/Vista/7; 256MB RAM; 120MB drive space; internet connection

System Mechanic is an all-in-one computer maintenance and repair program that combines System Mechanic's superior performance-tuning capabilities with lab-certified protection against viruses and spyware. This all-inclusive suite incorporates a combination of essential tools to keep your PC running fast and error-free, permanently rid your system of viruses and spyware, safeguard and recover your important files and photos should disaster strike, and securely wipe sensitive data from your hard drive.

Consistently recognised by leading experts and independent labs as the most effective performance-boosting program of its kind, System Mechanic offers an all-inclusive solution to the myriad problem sources that result in PC slowdowns, crashes, freezes and infections. Its unique approach to computer care makes System Mechanic the ultimate all-in-one PC insurance policy.

Features
• Program Accelerator supercharges program performance

• ActiveCare keeps PCs running like new

• AcceleWrite speeds PCs by optimising file-storage activity

• CRUDD Remover eliminates the root cause of system drag

• Internet Connection Repair puts you back in the virtual fast lane

• AntiVirus and AntiSpyware disinfect and protect your PC ⊠
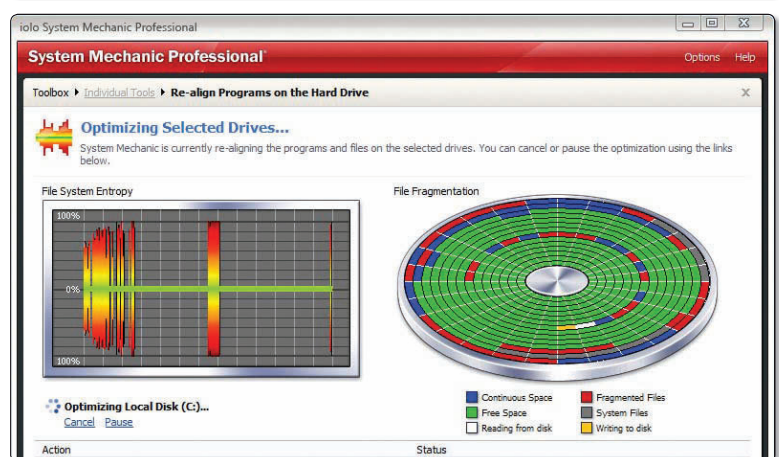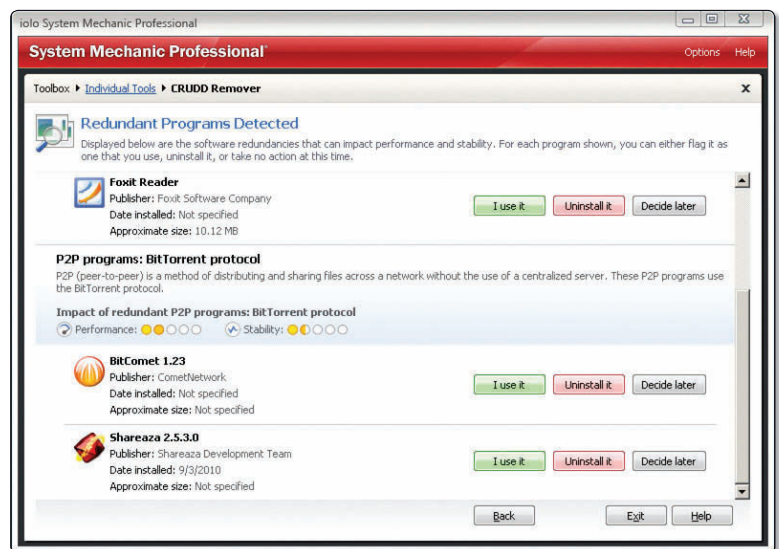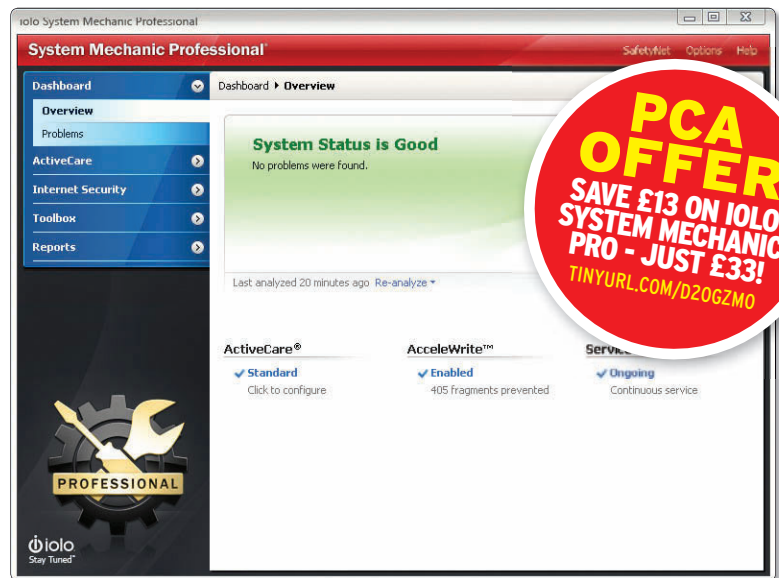
G Data InternetSecurity 2013
FULL PROGRAM (THREE-MONTH LICENCE) AVAILABLE ONLY ON THE DISC+

Installation details
Go to My Computer. Right-click the disc icon and open the disc. Select Files 216\G Data Internet Security 2013

Online registration required: follow the links during installation before 5 June 2013

System requirements
Windows XP/Vista/7; 512MB RAM (1GB Vista, Windows 7)

The always-changing nature of malware means pure signature-based detection will no longer suffice. G Data InternetSecurity 2013 combines reactive and proactive detection technologies to provide the best possible protection against viruses, hacking, spam and all other online threats. Its integrated parental controls protect your children from inappropriate websites, too.

G Data InternetSecurity 2013 is quick and easy to set up, works quietly in the background and does not slow down your system.

The three-month licence on the Disc+ can be extended four times for a full year's subscription. ⊠

Ashampoo Music Studio 2013
FULL PROGRAM AVAILABLE ONLY ON THE DISC+

Installation details
Go to My Computer. Right-click the disc icon and open the disc. Select Files 216\Ashampoo Music Studio 2013

Online registration required: follow the links during installation before 5 June 2013

System requirements
Windows XP/Vista/7; 512MB RAM; 128MB drive space; Internet Explorer 6 or later

Ashampoo Music Studio 2013 provides a wide array of features that covers everything from music creation to music production, while maintaining simplicity throughout the user interface.

Take control of your music collection and become creator, editor, designer and producer.

The clutter-free interface provides a taskbar for easy program navigation, while multi-core support provides a significant speed boost for audio conversion.

Features
• Intuitive task-oriented interface

• Multi-format audio conversion

• Support for common playlist formats

• Integrated cover designer

• Video-2-Music

• Track Mixer ⊠

DISC INSTRUCTIONS

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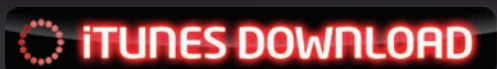
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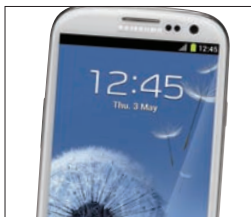
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£1,001 and over

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£151 and over

Flat-panels
Flat-panels under £200
£201 and over

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Price	£1200 inc VAT	£1,449 inc VAT	£950 inc VAT	£849 inc VAT	£1,700 inc VAT
Website	Apple.com/uk	Apple.com/uk	Samsung.com/uk	Apple.com/uk	Lenovo.com/uk
Build rating	★★★★½	★★★★★	★★★★☆	★★★★½	★★★★½
Features rating	★★★★½	★★★★½	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★½	★★★★½
Value rating	★★★★☆	★★★☆☆	★★★★☆	★★★★☆	★★★☆☆
Overall rating	★★★★½	★★★★½	★★★★☆	★★★★½	★★★★☆
Processor	1.8GHz Intel Core i5-3427U	2.6GHz Intel Core i5-3230M	1.7GHz Intel Core i5-3317U	1.7GHz Intel Core i5-3317U	1.8GHz Intel Core i5-3427U
RAM	4GB DDR3L	8GB DDR3L	8GB DDR3	4GB DDR3L	4GB DDR3L
Storage	256GB SSD	256GB SSD	128GB SSD	64GB SSD	180GB SSD
Screen size	13.3in gloss (anti-glare)	13.3in gloss (anti-glare)	15in matt	11.6in gloss	14in matt touchscreen
Screen resolution	1440x900	2560x1600	1600x900	1366x768	1600x900
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000
Video memory	N/A	N/A	N/A	N/A	N/A
Wireless	802.11a/b/g/n	802.11a/b/g/n	802.11a/b/g/n	802.11a/b/g/n	802.11b/g/n
Ethernet	Via adaptor only	Gigabit with adaptor	Gigabit	Via adaptor only	Via adaptor only
Bluetooth	✓	✓	✓	✓	✗ (optional)
USB	2x USB 3.0	2x USB 3.0	2x USB 3.0, 1x USB 2.0	2x USB 3.0	1x USB 3.0, 1x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✓	✓ (2)	✗	✓	✗
DisplayPort	✓	✓	✗	✓	✓
HDMI	✗	✓	✓ (Micro HDMI)	✗	✗
DVI	✗	✗	✗	✗	✗
VGA	✗	✗	✗	✗	✗
eSATA	✗	✗	✗	✗	✗
Media card slot	✓	✓	✓	✗	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	N/A	N/A	N/A	N/A
Extras	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, backlit keyboard	Webcam	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, fingerprint reader
Operating system	Mac OS X 10.8 Mountain Lion	Mac OS X 10.8 Mountain Lion	Windows 7 Home Prem 64bit	Mac OS X 10.8 Mountain Lion	Windows 8 Pro 64bit
Bundled software	iLife 11	iLife 11	Samsung Recovery Solution	iLife 11	None
Fear (Max detail)	29fps	29fps	28	28fps	Not tested
Battery	50Wh lithium-ion	74Wh lithium-ion	62Wh lithium-ion	35Wh lithium-ion	45Wh lithium-ion
Battery life	8 hrs 20 mins	8 hrs 44 mins	8 hrs 3 mins	6 hrs 10 mins	5 hrs
WB 6/PC Mark 7 score	132/4,497	Not tested/4,596	125/not tested	129/not tested	Not tested/4,783
Dimensions	325x227x4-17.5mm	313x219x19mm	375x237x15mm	300x192x3-17mm	331x226x22mm
Weight	1.34kg	1.64kg	1.67kg	1.07kg	1.54kg
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	• Now £50 cheaper • Decent turn of speed • Stunning battery life • Nice 256GB SSD • Ultra quiet	• Big price cut and slightly more speed • Strong performance • Fantastic battery life • Limited future expansion	• Sleek and stylish • Good matt screen • Comparatively fast • Great battery life • Lots of memory	• Reasonable price tag • Very light and compact • Strong performance for size • Good graphics • Great build quality	• Stylish casing • Good performance • Display not overly colourful • Rather expensive • Ordinary battery life
FULL REVIEW	TINYURL.COM/8C7LYCO	TINYURL.COM/BQBSHQC	TINYURL.COM/6VZ5TOG	TINYURL.COM/CCPOANM	TINYURL.COM/CTDUYOQ

>> 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 means a smaller, often non-removable battery. Expect six-plus hours of life.

There's no room for an optical drive, but you can always connect an external USB version.
READ MORE: TINYURL.COM/CEAHEZK

PC ADVISOR TEST CENTRE

Sub-£500 laptops	1 PC ADVISOR RECOMMENDED Toshiba Satellite L850D-12Q	2 PC ADVISOR BEST BUY Dell Inspiron 15R-5521	3 Acer Aspire V3-571	4 Lenovo G580	5 Asus X501A
Price	£350 inc VAT	£499 inc VAT	£450 inc VAT	£400 inc VAT	£340 inc VAT
Website	Toshiba.co.uk	Dell.co.uk	Acer.co.uk	Saveonlaptops.co.uk	Uk.asus.com
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★½☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★☆☆☆	★★★★☆	★★★★★	★★★★☆	★★☆☆☆
Value rating	★★★★☆	★★★★☆	★★★★½	★★★★☆	★★★★☆
Overall rating	★★★★☆	★★★★☆	★★★★½	★★★½☆	★★★½☆
Processor	1.7GHz AMD E2-1800	1.7GHz Intel Core i5-3317U	2.5GHz Intel Core i5-3210M	2.4GHz Intel Core i3-3110M	2.2GHz Intel Core i3-2328M
RAM	6GB DDR3	6GB DDR3	8GB DDR3	6GB DDR3	4GB DDR3
Storage	750GB HDD	1TB HDD	750GB hard drive	1TB HDD	320GB HDD
Screen size	15.6in gloss	15.6in gloss	15.6in gloss	15.6in gloss	15.6in gloss
Screen resolution	1366x768	1366x768	1366x768	1366x768	1366x768
Graphics	AMD Radeon HD 7340	Intel HD Graphics 4000	Intel HD Graphics 3000	Intel HD Graphics 4000	Intel HD Graphics 3000
Video memory	N/A	N/A	N/A	N/A	N/A
Wireless	802.11b/g/n	802.11b/g/n	802.11a/b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	10/100	Gigabit	Gigabit	10/100	Gigabit
Bluetooth	✓	✓	✓	✓	✗
USB	2x USB 3.0, 1x USB 2.0	2x USB 3.0, 2x USB 2.0	1x USB 3.0, 2x USB 2.0	2x USB 3.0, 1x USB 2.0	1x USB 3.0, 2x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✗	✗	✗	✗
DisplayPort	✗	✗	✗	✗	✗
HDMI	✓	✓	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✓	✓	✓	✓	✓
eSATA	✗	✗	✗	✗	✗
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	8x DVD±RW	8x DVD±RW	8x DVD±RW	8x DVD±RW	N/A
Extras	Webcam	Webcam	Webcam	Webcam	Webcam
Operating system	Windows 8 64bit	Windows 8 64bit	Windows 7 Home Prem 64bit	Windows 8 64bit	Windows 8 64bit
Bundled software	Nero 12 Essentials	N/A	Microsoft Office Starter	N/A	McAfee Security trial
Stalker (Low/High)	17/13fps	36/23fps	Not tested	37/24fps	10/17fps
Battery	48Wh lithium-ion	65Wh lithium-ion	48Wh lithium-ion	48Wh lithium-ion	47Wh lithium-ion
Battery life	3 hrs 45 mins	6 hrs 0 mins	5 hrs 18 mins	4 hrs 0 mins	4 hrs 35 mins
PCMark7 score	1,265	2,834	123 WorldBench 6 points	2,614	1,389
Dimensions	380x242x33.5mm	376x259x31mm	380x253x33mm	375x240x36mm	380x253x35mm
Weight	2.35kg	2.3kg	2.6kg	2.4kg	2.1kg
Warranty	1-year return-to-base	1-year in-home	1 year collect-and-return	1-year return-to-base	1-year return-to-base
Verdict	• Very low price • Bright and clear screen • Quality trackpad, keyboard • Lacks performance • A little heavy	• Good all-rounder • Ample battery life • Pleasant screen • Strong build quality • Can handle some games	• Strong general performance • Not much gaming potential • Excellent trackpad, keyboard • Reflective screen • Decent battery life	• Decent performance • Screen very glossy and has narrow viewing angles • Irritating touchpad • Rather weighty	• Low price • Decent build quality • Surprisingly good speakers • Very poor for gaming • No optical drive
FULL REVIEW	TINYURL.COM/AXNXBB4	TINYURL.COM/BEDJG3F	TINYURL.COM/CQKL4PD	TINYURL.COM/A786DEY	TINYURL.COM/B7YOHCJ

>> Buying advice

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	1 Dell Inspiron 15R SE	2 Lenovo IdeaPad Y580	3 PC Specialist Optimus IV	4 Asus VivoBook S400E	5 Toshiba Satellite P855-32J
Price	£659 inc VAT	£999 inc VAT	£959 inc VAT	£700 inc VAT	£999 inc VAT
Website	Dell.com/uk	Lenovo.com/uk	Pcspecialist.co.uk	Uk.asus.com	Toshiba.co.uk
Build rating	★★★★☆	★★★★☆	★★★☆☆	★★★★½	★★★★☆
Features rating	★★★★☆	★★★★½	★★★★☆	★★★★☆	★★★★½
Performance rating	★★★★☆	★★★★½	★★★★½	★★★★☆	★★★★½
Value rating	★★★★☆	★★★★☆	★★★★½	★★★★☆	★★★½☆
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★½☆	★★★½☆
Processor	3.2GHz Intel Core i7-3632QM	2.4GHz Intel Core i7-3630QM	2.4GHz Intel Core i7-3630QM	1.9GHz Intel Core i7-3517U	2.5GHz Intel Core i5-3210M
RAM	8GB DDR3	8GB DDR3	8GB DDR3	4GB DDR3	8GB DDR3
Storage	1TB hard drive	1TB HDD	1TB hard drive + 120GB SSD	500GB hard drive	750GB hard drive
Screen size	15.6in matt	15.6in gloss	17.3in matt	14.1in gloss touchscreen	15.6in gloss
Screen resolution	1366x768 pixels	1920x1080	1920x1080 pixels	1366x768 pixels	1920x1080 pixels
Graphics	AMD Radeon HD 7730M	Intel HD Graphics 4000	GTX 660M, Intel HD 4000	Intel HM70 Express	nVidia GeForce GT 640M
Video memory	2GB	N/A	2GB (660M)	N/A	2GB
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	4x USB 3.0	2x USB 3.0, 2x USB 2.0	3x USB 3.0, 1x USB 2.0	1x USB 3.0, 2x USB 2.0	4x USB 3.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✗	✗	✗	✗
DisplayPort	✗	✗	✗	✗	✗
HDMI	✓	✓	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✓	✓	✓	✓	✓
eSATA	✗	✗	✓	✗	✗
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Speakers, mic	Speakers, mic
Optical drive	8x DVD±R	BD-ROM	4x BD-ROM	None	6x BD-ROM
Extras	Webcam	Webcam	Webcam	Webcam	Webcam, glasses-free 3D
Operating system	Windows 8 Pro 64bit	Windows 8 64bit	Windows 8 Standard 64bit	Windows 8 Pro 64bit	Windows 8 Pro 64bit
Bundled software	None	None	None	None	Toshiba utilities
Fear (Max detail)	Not tested	Not tested	Not tested	22fps	71fps
Battery	48Wh lithium-ion	72Wh lithium-ion	76.9Wh lithium-ion	44Wh lithium-ion	48Wh lithium-ion
Battery life	3 hrs 43 mins	2 hrs 30 mins	2 hrs 55 mins	3 hrs 27 mins	3 hrs 4 mins
PCMark 7 score	Not tested	2,938	4,572	Not tested (2,928 PCMark 7)	2,716
Dimensions	378x252x34.1mm	385x255x35.7mm	405x270x50mm	339x239x21mm	385x253x33mm
Weight	2.8kg	2.8kg	3.3kg	1.9kg	2.94kg
Warranty	1-year onsite	1-year return-to-base	3-year RTB (1-year parts)	2 year International	1 year European carry-in
Verdict	• Now has 8GB RAM, 1TB HDD • Great matt display • Decent speed • Short battery life • Rather large laptop	• Good multimedia system • Intel WiDi technology • Graphics aren't high-end • Not easy to find in this exact specification	• Excellent performance despite the price hike • Massive 17.3in screen • Blu-ray drive • Battery life not great	• Almost an ultraportable • Poor battery life • Trackpad and keyboard not the best • No optical drive	• Glasses-free 3D • BD-ROM drive • Not cheap • Short battery life
FULL REVIEW	TINYURL.COM/A9LRYC3	TINYURL.COM/BAYPR3E	TINYURL.COM/ABQB6QP	TINYURL.COM/CZHXTYM	TINYURL.COM/B4KSAFJ

>> Buying advice

£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	1 PC ADVISOR GOLD Apple MacBook Pro Retina	2 PC ADVISOR RECOMMENDED Alienware M14x	3 Alienware M17x	4 Chillblast Genesis 7970	5 Samsung Series 7 700G7C
Price	£1,799 inc VAT	£1,315 inc VAT	£1,799 inc VAT	£1,199 inc VAT	£1,400 inc VAT
Website	Apple.com/uk	Alienware.co.uk	Alienware.co.uk	Chillblast.com	Samsung.com/uk
Build rating	★★★★★	★★★★½	★★★★☆	★★★☆☆	★★★★☆
Features rating	★★★★½	★★★★☆	★★★★★	★★★★★	★★★★½
Performance rating	★★★★½	★★★★★	★★★★★	★★★★★	★★★★½
Value rating	★★★★☆	★★★★☆	★★★☆☆	★★★★★	★★★★☆
Overall rating	★★★★½	★★★★½	★★★★☆	★★★★☆	★★★★☆
Processor	2.4GHz Intel Core i7-3630QM	2.7GHz Intel Core i7-3740QM	2.4GHz Intel Core i7-3630QM	2.7GHz Intel Core i7-3740QM	2.3GHz Intel Core i7-3610QM
RAM	8GB DDR3L	8GB DDR3	8GB DDR3	8GB DDR3	16GB DDR3
Storage	256GB SSD	500GB HDD + 32GB SSD	500GB HDD + 128GB SSD	750GB HDD/8GB SSD	1.5TB HDD
Screen size	15.4in gloss	14.1in gloss	17.3in gloss	15.6in gloss	17.3in gloss
Screen resolution	2880x1800 pixels	1600x900 pixels	1920x1080	1920x1080	1920x1080 pixels
Graphics	nVidia 650M, Intel HD 4000	nVidia GeForce GT 650M	AMD Radeon HD 7970M	AMD Radeon HD 7970M	nVidia GeForce GTX 675M
Video memory	1GB	1GB	2GB	2GB	2GB
Wireless	802.11a/b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Via adaptor only	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0, 1x USB 2.0	4x USB 3.0	3x USB 3.0, 1x USB 2.0	2x USB 3.0, 2x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✓ (2)	✗	✗	✗	✗
DisplayPort	✓	✓	✓	✓	✓
HDMI	✓	✓	✓	✓	✓
DVI	✗	✗	✗	✓	✗
VGA	✗	✓	✓	✗	✓
eSATA	✗	✗	✓	✓	✗
Media card slot	✓	✓	✗	✓	✓
Audio	Headphone jack, Toslink out	Headphone jack, mic	Headphone jack, mic	headphone jack, mic	Headphone jack, mic
Optical drive	N/A	8x DVD±R, 2.4x DVD-RW, 4x DVD+RW, 8x DVD-ROM	8x DVD±RW	6x BD-ROM/DVD±RW	6x BD-ROM, 8x DVD±R, 2.4x DVD-RW, 4x DVD+RW
Extras	HD webcam, multitouch trackpad, backlit keyboard	Customisable backlit keyboard	Webcam	Webcam	HD webcam, Dolby Home Theater v4
Operating system	Mac OS X 10.7.4 Lion	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit
Bundled software	iLife 11	None	None	None	Samsung Recovery
Fear (Max detail)	N/A	84fps	90Wh lithium-ion	76.9Wh lithium-ion	N/A
Battery	99Wh lithium-polymer	63Wh lithium-ion	2 hrs 30 mins	3 hrs	89Wh lithium-ion
Battery life	N/A	5 hrs 7 mins	N/A	N/A	3 hrs
WorldBench 6 score	N/A	168	4,924 (PCMark 7)	4,333 (PCMark 7)	123
Dimensions	359x247x18mm	337x258x38mm	410x304x44.5mm	376x256x43mm	410x285x50mm
Weight	2kg	2.9kg	4.26kg	3.3kg	3kg
Warranty	1-year return-to-base	1-year in-home support	1-year onsite	2-year collect-and-return	1-year international
Verdict	• Gorgeous super-resolution Retina display • Outstanding build quality • Wonderfully light and slim • Effortless to use	• Great gaming system • Stunning WorldBench score • SSD is now only 32GB • Glossy screen can be difficult to read	• Massive 17.3in screen • Stunning gaming performance • Weighty • Not cheap	• Chassis has cheap feel, average keyboard/touchpad • Strong games and Windows performance • Low price for the power	• Not the fastest laptop in general Windows use • Good graphics controller • Vast 17.3in screen • Blu-ray drive
FULL REVIEW	TINYURL.COM/7YGC3KJ	TINYURL.COM/CLGSCMV	TINYURL.COM/7N7R6T3	TINYURL.COM/9WTG6MP	TINYURL.COM/C93VN8N

>> 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**

Tablets

	Apple iPad 4	Google Nexus 7 by Asus	Apple iPad mini	Google Nexus 10 by Samsung	Amazon Kindle Fire HD
	1 PC ADVISOR GOLD	2 PC ADVISOR GOLD	3 PC ADVISOR GOLD	4 PC ADVISOR RECOMMENDED	5 PC ADVISOR RECOMMENDED
Price	£399 inc VAT	£159 inc VAT	£269 inc VAT	£319 inc VAT	£159 inc VAT
Website	Apple.com/uk	Play.google.com	Apple.com/uk	Play.google.com	Amazon.co.uk
Overall rating	★★★★½	★★★★½	★★★★½	★★★★½	★★★★☆
Platform	Apple iOS 6.0.1	Google Android 4.1 Jelly Bean	Apple iOS 6.0.1	Google Android 4.2 Jelly Bean	Amazon (based on Android 4.0)
Screen size/resolution	9.7in/2048x1536	7in/1280x800	7.9in/1024x768	10.1in/2560x1600	7in/1280x800
Storage/media card slot	16GB/none	16GB/none	16GB/none	16GB/none	16GB/none
Connectivity	802.11a/b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4, NFC	802.11b/g/n, Bluetooth 4
Processor	1.39GHz Apple A6X	1.3GHz nVidia Tegra 3	1GHz Apple A5	1.7GHz Cortex A-15	1.2GHz TI Omap 4460
RAM	1GB	1GB	512MB	2GB	752MB
Claimed battery life	10 hrs	10 hrs	10 hrs	9 hrs	8 hrs
Cameras (front/rear)	1.2/5Mp	1.2Mp/none	1.2/5Mp	1.9/5Mp	1.3Mp/none
Dimensions	241x186x9.4mm	120x199x11mm	135x200x7.2mm	264x178x8.9mm	137x193x10.3mm
Weight	652g	336g	308g	603g	395g
Warranty	1 year	1 year	1 year	1 year	1 year
Verdict	• Twice as fast as iPad 3 • Superb graphics • Breathtaking display • Supports 4G where available	• Best budget tablet • Strong build quality • Nice screen • Impressive battery life	• 7.9in screen large for a mini • Vibrant but not Retina screen • Decent performance • Very good cameras	• Fastest tablet overall • Highest screen resolution • Excellent value • Can't match iPad on build	• Slick, intuitive OS based on Android 4.0 • Vast content available • Excellent value
FULL REVIEW	TINYURL.COM/CRSTDSK	TINYURL.COM/CGBA439	TINYURL.COM/CLJWUVS	TINYURL.COM/ARL2KDG	TINYURL.COM/CH6CLNZ

Smartphones

	Sony Xperia Z	Apple iPhone 5	HTC One	Google Nexus 4 8GB	Samsung Galaxy S III
	1 PC ADVISOR GOLD	2 PC ADVISOR GOLD	3 PC ADVISOR GOLD	4 PC ADVISOR GOLD	5 PC ADVISOR BEST BUY
Price	£515 inc VAT	£529 inc VAT	£519 inc VAT	£239 inc VAT	£350 inc VAT
Website	Sonymobile.com	Apple.com/uk	HTC.com/uk	Play.google.com	Samsung.com/uk
Overall rating	★★★★½	★★★★½	★★★★½	★★★★½	★★★★½
Platform	Android 4.1 Jelly Bean	Apple iOS 6.0	Android 4.1 Jelly Bean	Android 4.2 Jelly Bean	Android 4.0 ICS
Processor	1.5GHz Snapdragon S4 Pro	1GHz Apple A6	1.7GHz Snapdragon 600	1.5GHz Snapdragon S4 Pro	1.4GHz Exynos 4212 Quad
Storage/media card	16GB/microSDHC	16GB/none	32GB/none	8GB/none	16GB/microSDXC
Screen size/resolution	5in/1920x1080	4in/640x1136	4.7in/1920x1080	4.7in/768x1280	4.3in/800x480
Input method	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	IPS touchscreen	Capacitive touchscreen
Connectivity	4G, Bluetooth, Wi-Fi	HSPA+, Bluetooth, Wi-Fi	4G, Bluetooth, Wi-Fi	HSPA+, GSM, Bluetooth, Wi-Fi	HSPA+, GSM, Bluetooth, Wi-Fi
Battery life (talk/standby)	11 hrs/550 hrs	8 hrs/225 hrs	Not specified	Not specified	11 hrs/750 hrs
Camera	13Mp, 1080p video	8Mp, 1080p video	4Mp, 1080p video	8Mp, 1080p video	8Mp, 1080p video
GPS	GPS, Glonass	A-GPS, Glonass	GPS, Glonass	GPS	A-GPS, Glonass
Dimensions, Weight	71x7.9x139mm, 146g	59x124x8mm, 115g	68x9.3x137mm, 143g	69x134x9.1mm, 139g	70x137x9mm, 133g
Warranty	2 years	1 year	2 years	2 years	2 years
Verdict	• 443ppi full-HD screen • Fast performance • Dust- and waterproof • Very good 13Mp camera	• Very fast performance • Superb 4in screen • Beautifully balanced weight • Siri voice-recognition	• Fastest smartphone yet • 468ppi full-HD screen • UltraPixel camera • Great sound quality	• Stunning price tag • Exceptional build quality • Keyboard allows fast typing • Not great storage	• Premium Android phone • Superb 4.8in screen • Strong build • Difficult to use one-handed
FULL REVIEW	TINYURL.COM/CXDR829	TINYURL.COM/CTRJEJD	TINYURL.COM/CE76X3T	TINYURL.COM/D7HTPFJ	TINYURL.COM/CQ4FM7X

>> Buying advice

Smartphones

The smartphone you choose to use is a very personal choice – while some prefer a small device that slips into a pocket, others prefer a large-screen handset that's better suited to watching video and typing on an onscreen keyboard.

The screen's resolution is just as important as its size. More pixels mean text and photos look sharper, and more information can be shown onscreen at once.

Unlike Android, iOS doesn't support Flash. However, HTML 5 is slowly replacing the standard, and Adobe has discontinued development of Flash Player for mobile devices in any case. Mobile apps can also allow you to view sites that still use Flash.

Look for a fast processor and decent graphics if you want to play games or watch video.

It's common to see mobile operators offer expensive handsets free with 24-month contracts. It'll usually work out cheaper to buy the handset outright, however, and it won't be locked to a network. READ MORE: TINYURL.COM/7SK2AS3

PC ADVISOR TEST CENTRE

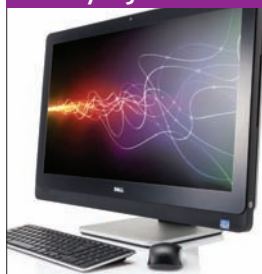| All-in-one PCs	1 PC ADVISOR BEST BUY	2 PC ADVISOR RECOMMENDED	3 PC ADVISOR RECOMMENDED	4	5
	Dell XPS One 27 Touch	**Apple iMac 27in 3.4GHz**	**Apple iMac 21.5in 2.7GHz**	**Toshiba LX830-12W**	**Acer Aspire 5600U**
Price	£1,679 inc VAT	£2,179 inc VAT	£1,099 inc VAT	£800 inc VAT	£870 inc VAT
Website	Dell.co.uk	Apple.com/uk	Apple.com/uk	Toshiba.co.uk	Acer.co.uk
Build rating	★★★★☆	★★★★★	★★★★★	★★★★☆	★★★★☆
Features rating	★★★★½	★★★★½	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★½	★★★☆☆	★★★☆☆	★★★☆☆
Value rating	★★★½☆	★★★★☆	★★★½☆	★★★★☆	★★★★☆
Overall rating	★★★★½	★★★★½	★★★★☆	★★★½☆	★★★½☆
Processor	3.1GHz Intel Core i7-3770S	3.4GHz Intel Core i7-3770	2.7GHz Intel Core i5-3335S	2.5GHz Intel Core i3-3210M	2.4GHz Intel Core i3-3110M
RAM	8GB DDR3	8GB DDR3	8GB DDR3	8GB DDR3	4GB DDR3
Storage capacity	2TB HDD + 32GB SSD	1TB HDD (integrated SSD)	1TB HDD	1TB HDD	500GB HDD
Screen	27in IPS touchscreen	27in IPS	21.5in IPS	23in IPS touchscreen	23in IPS touchscreen
Screen resolution	2560x1440	2560x1440	1920x1080	1920x1080	1920x1080
Graphics card	nVidia GeForce GT 640M	nVidia GeForce GTX 680MX	nVidia GeForce GT 640M	Intel HD Graphics 4000	nVidia GeForce GT 630M
Video memory	2GB	2GB	512MB	n/a	1GB
Wireless	802.11b/g/n	802.11a/b/g/n	802.11a/b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	✓	✓	✓ (10/100)	✓	✓
Bluetooth	✓	✓	✓	✓	✓
USB	6x USB 3.0	4x USB 3.0	4x USB 3.0	2x USB 3.0, 4x USB 2.0	2x USB 3.0, 1x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✓ (x2)	✓	✗	✗
HDMI	✓	✗	✗	✓	✓
Media card slot	✓	✓	✓	✓	✓
Max disc speeds	BD-ROM/DVD±RW	None	None	DVD±R	DVD±R
Extras	2Mp webcam, wireless keyboard/mouse, speakers	1.3Mp webcam, wireless keyboard/mouse	1.3Mp webcam, wireless keyboard/mouse	1Mp webcam, wireless keyboard/mouse	2Mp webcam, wireless keyboard/mouse
Operating system	Windows 8 64bit	OS X 10.8 Mountain Lion	OS X 10.8 Mountain Lion	Windows 8 64bit	Windows 8 64bit
Power consumption	79W (idle), 138W (load)	77W (idle), 132W (load)	40W (idle), 69W (load)	36W (idle), 57W (load)	42W (idle), 56W (load)
Aliens Vs Predator 720p	15fps	44fps	11fps	5fps	8fps
Aliens Vs Predator 1080p	28fps	81fps	22fps	8fps	15fps
PCMark 7 score	5,876	4,114	3,100	3,351	2,413
Dimensions	491x71x664mm	650x203x516mm	450x528x175mm	566x52x415mm	574x43x422mm
Weight	15.9kg	9.5kg	5.7kg	7kg	9.2kg
Warranty	1 year next-day in-home	1 year return-to-base	1 year return-to-base	1 year UK pickup & return	1 year return-to-base
Verdict	• Superb build quality • Stunning 27in IPS display • Nice graphics adaptor • Rather large and heavy	• Gorgeous screen • Great gaming power • No optical drive or touchscreen • Not a cheap configuration	• Build quality hard to beat • Excellent screen, even if only 21.5in • Not the largest of all-in-ones • No optical drive or touchscreen	• Decent overall performance • Poor for gaming • Built-in TV tuner • WMC remote, but no WMC	• Competitive price • Rather sluggish performance • Average specifications • Plenty of preinstalled software
FULL REVIEW	TINYURL.COM/CQW5ZY9	TINYURL.COM/D2GD77D	TINYURL.COM/BK83EB8	TINYURL.COM/CKH5J9L	TINYURL.COM/CG5F5HY

>> Buying advice

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

Business PCs	1 Chillblast Fusion Sapphire	2 PC Specialist MPC-3470T	3 Quiet PC Serenity Value	4 Eclipse eBiz Precision i322H61	5 Arbico i5357 Pro
Price	£549 inc VAT	£479 inc VAT	£795 inc VAT	£569 inc VAT	£579 inc VAT
Website	Chillblast.com	Pcspecialist.co.uk	Quietpc.com	Eclipsecomputers.com	Arbico.co.uk
Build rating	★★★★☆	★★★★½☆	★★★★★½	★★★☆☆	★★★★½☆
Features rating	★★★★☆	★★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★☆☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★☆☆	★★☆☆☆	★★★☆☆	★★★☆☆
Overall rating	★★★★☆	★★★★½☆	★★★½☆	★★★★½☆	★★★☆☆
Processor	3.4GHz Intel Core i5-3570K	2.9GHz Intel Core i5-3470T	3.4GHz Intel Core i5-3570K	3.3GHz Intel Core i3-3220	3.4GHz Intel Core i5-3570K
RAM	8GB DDR3	8GB DDR3	8GB DDR3	16GB DDR3	8GB DDR3
Storage capacity	1TB HDD	1TB HDD	1TB HDD	1TB HDD + 120GB SSD	1TB HDD + 60GB SSD
Motherboard	Asus P8B75-M LX	Asus P8H61-I R2.0	Gigabyte GA-Z77-D3H	Asus P8H61-MX/USB3	Asus P8B75-M LX Plus
CPU cooler	Standard Intel cooler	Standard Intel cooler	Gelid Tranquillo	Standard Intel cooler	Xigmatek Apache
Power supply	EzCool 500W	Power Man 160W	Nexus NX-5000 R3 530W	Generic 500W	Ace 650W
Screen	23.6in Iiyama X2377HDS	N/A	N/A	23.6in Edge10 EF240A	N/A
Screen resolution	1920x1080 pixels	N/A	N/A	1920x1080	N/A
Graphics	Intel HD Graphics 4000	Intel HD Graphics 2500	Intel HD Graphics 4000	Intel HD Graphics 2500	Intel HD Graphics 4000
Video memory	N/A	N/A	N/A	N/A	N/A
USB	3x USB 3.0, 7x USB 2.0	2x USB 3.0, 7x USB 2.0	5x USB 3.0, 7x USB 2.0	3x USB 3.0, 5x USB 2.0	2x USB 3.0, 6x USB 2.0
Sound	Onboard	Onboard	Onboard	Onboard	N/A
Speakers	Built into monitor	N/A	N/A	Built into monitor	N/A
Case	CiT Fortress	In-Win BM643	Nexus Thrio 310	NA-705B	CiT Templar Micro ATX
Keyboard	Logitech MK260 (wireless combo)	Microsoft Comfort Curve 3000, Logitech USB mouse	Gigabyte GK-KM6150 (wired combo)	Microsoft Optical Desktop 400 (wired)	Logitech MK120 (wired combo)
Optical drive	24x DVD±RW	8x DVD±RW	24x DVD±RW	24x DVD±RW	24x DVD±RW
Operating system	Windows 8 Professional	Windows 8 Professional	Windows 8 Professional	Windows 8 Professional	Windows 8 Professional
Bundled software	Family software pack	PowerDVD, card reader	None	None	None
PCMark7 overall score	4,217	3,419	3,713	4,170	6,037
Power consumption	36W idle/84W load	27W idle/53W load	31W idle/105W load	43W idle/69W load	41W idle/108W load
Warranty	2-year collect-and-return	3-year labour, 1-year parts	2-year collect-and-return	1-year RTB	2-year RTB (1-year parts)
Verdict	• Competitive price • Strong performance • Excellent 23.6in IPS screen • Case could be more understated	• Small-form-factor • Conservative on power • Not as fast as the more powerful models here • Cramped internals make it difficult to upgrade	• Rather expensive • Very quiet operation • Good all-round performance • Lack of SSD affects performance in our benchmarks	• Modest processor • 16GB of RAM generous, but wasted • Screen of only average quality • Messy internals	• Not the cheapest • Price doesn't include a monitor • Powerful processor probably not necessary for office use • SSD could be of larger capacity
FULL REVIEW	TINYURL.COM/CX5T8X5	TINYURL.COM/ADM2BEJ	TINYURL.COM/9WP5SSS	TINYURL.COM/ABFZOA3	TINYURL.COM/COQEWFX

>> Buying advice

Business PCs

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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.

PC ADVISOR TEST CENTRE

Family PCs	1 PC ADVISOR BEST BUY	2	3 PC ADVISOR RECOMMENDED	4	5
	Chillblast Fusion Lynx	**Wired2Fire Diablo Predator**	**CyberPower Ultra Scylla SE (MKII)**	**PC Specialist Vanquish HD-660**	**Eclipse Solar i5357N66Ti**
Price	**£799 inc VAT**	**£899 inc VAT**	**£699 inc VAT**	**£899 inc VAT**	**£929 inc VAT**
Website	Chillblast.com	Wired2fire.co.uk	Cyberpowersystem.co.uk	Pcspecialist.co.uk	Eclipsecomputers.com
Build rating	★★★★½	★★★★☆	★★★☆☆	★★★★☆	★★★★☆
Features rating	★★★★½	★★★★☆	★★★½☆	★★★★☆	★★★★½
Performance rating	★★★★☆	★★★★★	★★☆☆☆	★★★★★	★★★★½
Value rating	★★★★½	★★★★½	★★★★☆	★★★½☆	★★★½☆
Overall rating	★★★★½	★★★★½	★★★★☆	★★★★☆	★★★★☆
Processor	3.4GHz Intel Core i5-3570K	3.4GHz Intel Core i5-3570K	4.2GHz AMD FX-4170	3.4GHz Intel Core i5-3570	3.4GHz Intel Core i5-3570
RAM	16GB DDR3	8GB DDR3	16GB DDR3	8GB DDR3	16GB DDR3
Storage capacity	120GB SSD + 1TB HDD	120GB SSD + 1TB HDD	2TB HDD	120GB SSD + 1TB HDD	64GB SSD + 2TB HDD
Motherboard	Asus P8B75-M LX	Asus P8Z77-V LX	Gigabyte GA-78LMT-USB3	Asus P8H77-M	Asus P8Z77-V LX
CPU cooler	Standard Intel cooler	Xigmatek Achilles CPU cooler	Standard AMD cooler	Standard Intel cooler	Standard Intel cooler
Power supply	700W Chillblast	600W Corsair CX600	500W Cooler Master	450W FSP Dual Rail	650W EZCool
Screen	23in Iiyama X2377	23in AOC i2352VH	24in Edge10 EF240A	23in AOC i2352VH	23.6in Acer G236HLBbd
Screen resolution	1920x1080 pixels	1920x1080	1980x1080	1920x1080	1920x1080
Graphics card	XFX AMD Radeon HD 7770	nVidia GeForce GTX 660	MSI AMD Radeon HD 7770	Palit nVidia GeForce GTX 660	nVidia GeForce GTX 660 Ti
Video memory	1GB	2GB	1GB	2GB	2GB
Wireless	802.11b/g/n	N/A	802.11b/g/n	802.11b/g/n	N/A
USB	1x USB 3.0, 1x USB 2.0	3x USB 3.0, 6x USB 2.0	2x USB 3.0, 6x USB 2.0	2x USB 3.0, 6x USB 2.0	3x USB 3.0, 6x USB 2.0
Media card slot	✗	✗	✗	✗	✗
Sound card	Onboard	Onboard	Onboard	Onboard	Onboard
Speakers	2x Logitech LS220	None	2x Logitech LS220	2x Logitech LS220	None
Case	Cooler Master Silencio 450	Xigmatek Asgard Pro	Cooler Master Elite 430	Cooler Master Elite 311	Cooler Master K350
Keyboard	Logitech MK260 wireless combo	Octigen JK-745, Logitech B110 wired keyboard and mouse	Logitech MK320 wireless combo	Logitech MK260 wireless combo	Microsoft Desktop 600 wired combo
Optical drive	Lite-On BD-ROM, Samsung 24x DVD±RW	LG BD-ROM/DVD±RW combo drive	Pioneer BD-ROM/DVD±RW combo drive	LG BD-ROM/DVD±RW combo drive	Lite-On BD-ROM/DVD±RW combo drive
Operating system	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit
Bundled software	CyberLink PowerDVD 10	None	None	CyberLink PowerDVD 10	None
Sniper (Med/High)	41/9fps	Not tested	43/9fps	60/15fps	75/18fps
PCMark 7	5311	6376	2842	5768	5058
Warranty	2-year collect-and-return	2-year RTB	3-year RTB (1-year parts)	3-year 'Silver'	1-year RTB
Verdict	• Hefty 16GB of memory • Lightning-fast storage • Vibrant IPS screen • Noise-damping material in case	• Best overall performance • Strong gaming power • Quality AOC screen • Chillblast offers marginally better value for money	• Low price • AMD chip not as fast as the Intel equivalents • No solid-state storage • Well-made casing	• Impressive overall performance • Good gaming potential • Strong AOC screen • Not the cheapest	• Relatively expensive • Capacious and fast storage • GTX 600 Ti offers great gaming framerates • High noise levels
FULL REVIEW	TINYURL.COM/BX2QODV	TINYURL.COM/AECXMNQ	TINYURL.COM/BYTG8QG	TINYURL.COM/A2VE9NZ	TINYURL.COM/AB2ESOZ

>> Buying advice

Family PCs

Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

A family PC needs to offer decent performance in every area, able to cater for the needs of each individual – but there are some areas where you can cut costs.

If you're not itching to play the latest games, opt for integrated rather than dedicated graphics. AMD processors are more adept in this regard, while Intel CPUs offer faster application performance.

Intel's Core i5-3570K will form the core of a powerful home PC, although the older Core i5-2500K may be offered at lower cost and supports easy overclocking.

Consider 4GB of RAM and a 500GB hard drive as the minimum; both are easy to upgrade later.

Screen quality is crucial, with the best displays using IPS tech. A Blu-ray drive will help make the most of a 23.6in full-HD monitor.

For Skyping, watching films and listening to music, decent speakers and a webcam are essential.
READ MORE: TINYURL.COM/BL4UREB

Media PCs	1 PC ADVISOR BEST BUY	2 PC ADVISOR RECOMMENDED	3	4	5
	Chillblast Vacuum Mini 2	**Apple Mac mini**	**Quiet PC FC8 Fanless Mini PC**	**CyberPower Ultra HTPC**	**Arbico eXcel A2540**
Price	**£999 inc VAT**	**£795 inc VAT**	**£1,198 inc VAT**	**£749 inc VAT**	**£699 inc VAT**
Website	Chillblast.com	Apple.com/uk	Quietpc.com	Cyberpowersystem.com	Arbico.co.uk
Build rating	★★★★½	★★★★★	★★★★½	★★★★☆	★★★★½
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★★	★★★★★
Performance rating	★★★★☆	★★★★☆	★★★★★	★★★★☆	★★★☆☆
Value rating	★★★★☆	★★★★½	★★★☆☆	★★★★½	★★★★☆
Overall rating	★★★★½	★★★★½	★★★★☆	★★★½☆	★★★☆☆
Processor	2.5GHz Intel Core i7-3770T	2.3GHz Intel Core i7-3615QM	2.5GHz Intel Core i7-3770T	3.8GHz AMD FM2 A10-5800k	3.6GHz AMD A6-5400K
RAM	16GB DDR3	4GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage capacity	240GB SSD	1TB HDD	120GB SSD + 1TB HDD	120GB SSD + 1TB HDD	2TB HDD + 120GB SSD
Motherboard	Asus P8H77-I	Apple Mac Mini board	Gigabyte GA-Z77M-WIFI	Gigabyte F2A85XM-D3H	Asus F2A85-M LE
CPU cooler	Streacom heatpipe system	Apple cooling fan	Streacom heatpipe system	Standard AMD cooler	Scythe Shuriken
Power supply	Streacom 150W	85W Apple	NanoPSU 150W	500W Cooler Master	Xigmatek 400W
Graphics	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	AMD Radeon HD 7660D	AMD Radeon HD 7540D
TV tuner	BGT 3620 (dual tuner)	N/A	TBS 6280 (dual tuner)	Compro S800F (dual tuner)	Compro VideoMate T220
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	N/A
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✗	✗
USB	4x USB 3.0, 6x USB 2.0	4x USB 3.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0	2x USB 3;0, 4x USB 2.0
Ports	HDMI, DVI, VGA, S/PDIF, line-in/out	HDMI, Thunderbolt, FireWire 800, Toslink, line-in/out	2x HDMI, DVI, S/PDIF, mic, line-in/out	HDMI, DVI, VGA, S/PDIF, mic, line-in/out	HDMI, DVI, VGA, eSATA, S/PDIF, mic, line-in/out
Case	Streacom FC8 EVO	Apple aluminium unibody	Streacom FC8 EVO	Silverstone SST-GD06B	Silverstone Grandia GD04
Keyboard and mouse	Xebec HTPC wireless touchpad and keyboard	Apple Magic Trackpad, Apple Bluetooth Keyboard	Gigabyte GK-KM7580 wireless keyboard and mouse	N/A	Logitech K400 wireless keyboard
Remote control	✓ (integrated to keyboard)	✗ (optional, £25)	✓	✓	✓
LCD screen	✗	✗	✗	✗	✗
Optical drive	Sony BD-ROM drive	Optional (£65)	8x Sony DVD±RW drive	12x Pioneer Blu-ray writer	6x LG Blu-ray writer
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Operating system	Windows 7 Home Prem 64bit	Apple OS X 10.8 Mountain Lion	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit	Windows 7 Home Prem 64bit
PC Mark Overall	5,749	3,038	5,928	4,113	3,332
PC Mark Entertainment	4,254	3,088	4,410	3,512	2,395
Stalker Med/Ultra (fps)	34/9	34/9	35/9	66/21	39/12
AvP Med/Ultra (fps)	8/5	8/5	9/5	24/13	13/7
Consumption (idle)	25W	11W	27W	41W	44W
Consumption (load)	52W	50W	61W	140W	109W
Warranty	2-year collect-and-return	2-year parts and labour	2-year collect-and-return	3-year labour, 1-year parts	2-year labour, 1-year parts
Verdict	• Mostly silent operation • Very good performance • Small case • Not the cheapest	• Silent and power-efficient • Looks and works great • Needs some software setup • Not the fastest overall	• Strong storage • Fastest general performance • Average gaming speeds • No Blu-ray	• Strong storage • Good gaming performance • Blu-ray writer • Rather too loud	• Vast storage • Blu-ray writer • Poor benchmark figures • High noise levels
FULL REVIEW	TINYURL.COM/CSFADGV	TINYURL.COM/D2DAZBQ	TINYURL.COM/D2CFDAS	TINYURL.COM/BLOTLC7	TINYURL.COM/CJBMRDL

>> Buying advice

Media PCs

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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

PC ADVISOR TEST CENTRE

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- Top quality 24" Iiyama X2377 IPS Monitor
- Logitech Keyboard and Mouse
- All systems come with 2 year warranty!

£549 inc VAT

FUSION GENESIS MINI
Monster gaming from a netbook?!

- 11" Ultra Portable Notebook
- Intel Ivybridge Core i5 3230M CPU @ 2.6GHz
- NVIDIA GeForce GTX 650M Video Card
- USB 3.0 Ports and SD/MMC Card Slot
- 8GB 1333MHz DDR3 Memory
- 1TB Seagate Momentus XT Hybrid SSD/HDD
- 802.11N Wireless and Bluetooth 4.0
- HDMI output for connection to HDTV
- Samsung Blu-Ray Combo Drive
- 750W Corsair PSU
- Windows 8 64 bit or Windows 7 64 bit

£699 inc VAT

FUSION STEALTH
Ultra quiet gaming performance!

- Fractal Design R4 Case in Black
- Intel Core i5 3570K Overclocked to 4.3GHz
- Gelid Tranquillo Ultra Low Noise CPU Cooler
- 2 manually RPM-controllable Fractal Design case fans
- Asus P8Z77-V Motherboard
- Asus GeForce GTX 670 Direct CU II (ultra quiet cooler)
- 16GB Corsair 1333 Memory (2 x 8GB)
- Samsung 840 series SSD 120GB
- 2TB Seagate 7200rpm HDD
- LG Blu Ray Combi Drive
- 680W BeQuiet Straight power semi-active PSU
- Windows 8 64 bit or Windows 7 64 bit
- Winner of four 9/10 review awards!

£1199 inc VAT

HEXUS RECOMMENDED
PC ADVISOR RECOMMENDED
TechRadar rating 4.5
PCFormat

WINNER 2012 PC ADVISOR AWARDS
PC PRO Excellence AWARDS 2012
expert REVIEWS 2012 AWARDS
COMPUTER SHOPPER 2012 AWARDS

Gaming PCs	1 Chillblast Fusion Firebird PC ADVISOR BEST BUY	2 Scan 3XS Performance GTX PC ADVISOR RECOMMENDED	3 Chillblast Fusion Stealth	4 Overclockers Primo GTX 660 PC ADVISOR RECOMMENDED	5 Dino PC Dark Claw GTX 670
Price	£1,199 inc VAT	£1,849 inc VAT	£1,199 inc VAT	£643 inc VAT	£1,249 inc VAT
Website	Chillblast.com	Scan.co.uk	Chillblast.com	Overclockers.co.uk	Dinopc.com
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★☆☆	★★★★☆	★★★★☆	★★☆☆☆	★★★★☆
Performance rating	★★★★★	★★★★★	★★★★☆	★★★☆☆	★★★★☆
Value rating	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★★
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Processor	3.5GHz (4.6GHz) Intel Core i7-3770K	3.4GHz (4.6GHz) Intel Core i5-3570K	3.4GHz Intel Core i5-3570K (4.3GHz)	3.1GHz Intel Core i5-3450	3.4GHz (4.5GHz) Intel Core i5-3570K
CPU cooler	Akasa Nero 3	Thermalright Macho	Gelid Tranquillo cooler	Standard Intel cooler	Xigmatek Knighthawk
Memory	16GB DDR3	8GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage	120GB SSD + 2TB HDD	240GB SSD + 2TB HDD	120GB SSD + 2TB HDD	60GB SSD + 500GB HDD	120GB SSD + 1TB HDD
Power supply	600W Corsair	600W Corsair GS600	680W BeQuiet Straight Power	400W PC Power & Cooling	550W Xigmatek
Motherboard	Asus P8Z77-V	Gigabyte GA-Z77-D3H	Asus P8Z77-V	Gigabyte H61MA-D2V	Asus P8Z77-V LX
USB	4x USB 3.0, 4x USB 2.0	6x USB 3.0, 4x USB 2.0	6x USB 3.0, 4x USB 2.0	2x USB 3.0, 8x USB 2.0	2x USB 3.0, 4x USB 2.0
Screen	23.6in Iiyama X2377HDS (1920x1080)	27in Asus PB278Q (2560x1440)	Not supplied	Not supplied	23.6in Asus VS247H (1920x1080)
Graphics	Palit Jetstream nVidia GeForce GTX 680	EVGA nVidia GeForce GTX 680	Asus nVidia GeForce GTX 670 Direct CU II	Gigabyte nVidia GeForce GTX 660 Windforce 2X	Gigabyte nVidia GeForce GTX 670 OC
Graphics memory	2GB	2GB	2GB	2GB	2GB
Sound	Onboard	Asus Xonar DG 5.1	Onboard	Onboard	Onboard
Connectivity	Gigabit ethernet, 802.11b/g/n	Gigabit ethernet	802.11b/g/n	Gigabit ethernet	Gigabit ethernet
Ports	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	DVI, VGA	DVI, VGA	2x DVI, HDMI, DisplayPort
Case	Corsair Carbide 200R	Corsair Carbide 300R	Fractal Design Define R4	Xigmatek Asgard II	Corsair Carbide 200R
Keyboard & mouse	Logitech MK260	Corsair K60 keyboard, Corsair M60 mouse	Not supplied	Not supplied	Cyborg V7 keyboard, Cyborg rat3 mouse
Optical drive	BD-ROM/DVD±RW	DVD±RW	BD-ROM/DVD±RW	DVD±RW	DVD±RW
Operating system	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit	Windows 8 64bit
Extras	Option Family Software package, card reader	Corsair Vengeance 1300 headset	None	None	BullGuard security, surge protector
PC Mark 7	6,498	6,485	6,422	5,507	6,412
Hard Reset	156, 138	149, 129	Not tested	108, 91	150, 131
Lost Planet 2	104, 81	93, 77	Not tested	71, 56	91, 74
Stalker CoP	273, 122	254, 121	Not tested	180, 84	255, 116
Alien vs Predator	113, 61	112, 60	Not tested	82, 43	107, 58
Sniper Elite V2	95, 24	94, 23	Not tested	62, 16	86, 22
Warranty	2-year collect-and-return	1-year collect-and-return, 2-year RTB (parts and labour)	2-year collect-and-return	2-year collect-and-return	3-year PromoCare
Verdict	• Excellent performance • Unmatched gaming power • High-calibre 23.6in Iiyama IPS monitor • Case a little cramped • No specialist gaming peripherals	• Stunning performance • Very good 27in flat-panel • Minimalist good looks • Comes with lots of gaming goodies • Rather expensive	• Stunningly quiet • High price takes into account noise reduction • Gaming performance good, but not as strong as some here	• Incredibly cheap price • Respectable performance • Storage options not great • Small and basic case • Less versatile motherboard	• Only a GTX 670, but overclocked to the max • Not as fast overall as the Chillblast • Nice 23.6in Asus display • Impressive input devices • No Blu-ray
FULL REVIEW	TINYURL.COM/CFDNSP9	TINYURL.COM/CSVFPTH	TINYURL.COM/BF8RMBD	TINYURL.COM/D288LKL	TINYURL.COM/D9TNXPQ

All gaming scores given at Medium and Ultra settings, measured in fps

>> Buying advice

Gaming PCs

Changes in exchange rates and component supply issues mean we can't guarantee PCs listed here will be available as specified. All our prices include delivery charges.

Gaming PCs put performance and upgradability before subtlety and quiet operation. Many run overclocked CPUs to eke out every bit of available speed.

Intel's Core i5-3570K is a popular choice of CPU, but will require a decent cooler and beefy PSU. The HyperThreaded i7-3770K is slightly faster, but dearer.

Cooling is essential for stability. Liquid-cooling systems, dust filters, fan-speed controls and good cable-management can aid airflow.

Most important of all is the graphics card; vendors will often skimp on storage, networking and other features and throw all their budget at the graphics card.

nVidia's GTX 680 delivers unparalleled performance – but at a price. Cheaper solutions include the GeForce GTX 660 and 670.

Look for wired peripherals and a headset. Good warranty terms are crucial for overclocked PCs. READ MORE: TINYURL.COM/CZXH443

PC ADVISOR TEST CENTRE

Internet security suites

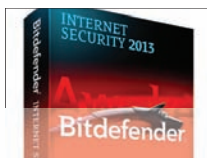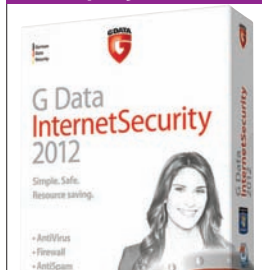|	F-Secure IS 2013	Norton IS 2013	Bitdefender IS 2013	Trend Micro Titanium IS 2013	Kaspersky IS 2013
	PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED		PC ADVISOR RECOMMENDED	
Annual price	£39 inc VAT	£49 inc VAT	£44 inc VAT	£59 inc VAT	£49 inc VAT
Licence terms	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year
Website	f-secure.com	uk.norton.com	bitdefender.co.uk	trendmicro.co.uk	kaspersky.co.uk
Overall rating	★★★★½	★★★★½	★★★★½	★★★★½	★★★★☆
Signature-based detection	99%	99.8%	98.8%	100%	98.1%
Malware blocking (full)	100%	100%	100%	100%	94.4%
Malware blocking (partial)	0%	0%	0%	0%	0%
Clean-up of malware	90%	60%	90%	80%	80%
On-demand scan speed	76 secs	79 secs	121 secs	110 secs	70 secs
On-access scan speed	230 secs	175 secs	341 secs	341 secs	368 secs
Interface design	Very good	Superior	Very good	Very good	Very good
Verdict	• Good value for money • Great scores in most tests • User-friendly interface • Fast scan speed	• Real-world attack scores bode well for its efficacy • Consumes few resources • Polished, simple interface	• Good value for money • Exceptional in some tests • Can slow startup • MyBitdefender a nice touch	• Brilliant performer • Scan times a little low • More guidance required • Expensive	• Excellent at cleaning up infections; not so hot on detection • Impacts system speed
FULL REVIEW	TINYURL.COM/CKKPBWF	TINYURL.COM/8U7W6OA	TINYURL.COM/CAFEHS7	TINYURL.COM/CRZZ73Z	TINYURL.COM/BRY3CTZ

GLOSSARY: • IS: Internet Security

Antivirus software

	Norton AntiVirus	Bitdefender Antivirus Pro	G Data AntiVirus	Kaspersky Anti-Virus	Trend Micro Titanium AV+
	PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED	
Annual price	£39 inc VAT	£24 inc VAT	£34 inc VAT	£39 inc VAT	£39 inc VAT
Licence terms	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year
Website	Norton.com	Bitdefender.co.uk	Gdatasoftware.com	Kaspersky.co.uk	Uk.trendmicro.com
Overall rating	★★★★½	★★★★½	★★★★☆	★★★★☆	★★★½☆
Signature-based detection	98.7 percent	97.5 percent	99.4 percent	95.7 percent	98.4 percent
Malware blocking (full)	96 percent	68 percent	84 percent	88 percent	88 percent
Malware blocking (partial)	0 percent	20 percent	4 percent	4 percent	8 percent
Clean-up of active malware	80 percent	80 percent	80 percent	80 percent	80 percent
On-demand scan speed	121 secs	126 secs	111 secs	103 secs	187 secs
On-access scan speed	272 secs	327 secs	336 secs	310 secs	249 secs
Interface design	Very good	Very good	Very good	Very good	Very good
Verdict	• Smooth user interface • Large 'Fix Now' button • Moderate impact on system performance	• Very good performance for malware removal • Average scan speeds • Three interface tiers	• Strong malware detection, blocking and removal • Good user interface, but poorly translated	• Well-designed interface • Easy to use • On-demand single-file scans • Impacts PC performance	• Set-it-and-forget-it security • Cloud-based protection • Requires web connection • Good performance
FULL REVIEW	TINYURL.COM/4P5YCXP	TINYURL.COM/66SK77U	TINYURL.COM/6BFXWCS	TINYURL.COM/6HQA2WB	TINYURL.COM/4HUORV3

>> Buying advice

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

Sub-£150 printers

	Samsung ML-2955DW	Oki C110	Pantum P2050	HP Photosmart 7520	Canon MX895
	1 PC ADVISOR GOLD	**2** PC ADVISOR BEST BUY	**3**	**4** PC ADVISOR RECOMMENDED	**5** PC ADVISOR RECOMMENDED
Price	**£100 inc VAT**	**£126 inc VAT**	**£50 inc VAT**	**£125 inc VAT**	**£140 inc VAT**
Website	Samsung.com/uk	Oki.co.uk	Pantum.com	Hp.com/uk	Canon.co.uk
Overall rating	★★★★½	★★★★☆	★★★½☆	★★★★☆	★★★★☆
Technology	Mono laser	Colour laser	Mono laser	Colour inkjet	Colour inkjet
Max print resolution	1200x1200dpi	1200x600dpi	1200x600dpi	9600x2400dpi	9600x2400dpi
Actual print speed	B=22.2ppm	B=15.8ppm/C=2.5ppm	B=15.8ppm	B=17.6ppm C=7.9ppm	B=11.9ppm C=7.3ppm
Scan/fax facilities	none	None	None	1200x2400 scans	1200x2400 scans, fax
Supported interfaces	USB 2.0, 802.11b/g/n, ethernet	USB 2.0	USB 2.0	USB 2.0, 802.11b/g/n, HP ePrint	USB 2.0, 802.11b/g/n, ethernet
Cost per page	B=2.7p	B=3.6p/C=5p	B=2.4p	B=2.4p/C=4.8p	B=2.9p/C=12.5p
Media card/auto duplex	✗✓	✗✗	✗✗	✓✓	✓✓
Input capacity	251 sheets	100 sheets	150 sheets + manual	125 sheets + 20 tray + 25 ADF	150 sheets + 35 ADF
Dimensions	348x338x197mm	396x380x275mm	380x260x236mm	454x551x220mm	491x448x218mm
Weight	7.2kg	14.4kg	6.1kg	8.6kg	11.7kg
Warranty	1 year	3 years	1 year	1 year	1 year
Verdict	• Speedy for the price • Slim but well-defined text • Reasonable running costs • Wi-Fi/wired network support	• Good-value colour laser • Performs better than an equivalent inkjet • No duplex mode	• Now available for just £50 • Decent design • No fancy features • Solid running costs	• Nice 4.3in touchscreen • Separate photo/ADF trays • Good speed for an Inkjet • Competitive running costs	• Excellent photo quality • Both Wi-Fi and Ethernet • Scans and faxes • Not the fastest printer
FULL REVIEW	TINYURL.COM/CCLSZDM	TINYURL.COM/YLNO5RV	TINYURL.COM/C764SZ2	TINYURL.COM/98G9XTE	TINYURL.COM/92YQ4SF

£151+ printers

	Kyocera Mita FS-1320D	Canon i-Sensys LBP7780Cx	Lomond EvoJet 2 Office	Xerox Phaser 3320	Kyocera FS-C5250DN
	1 PC ADVISOR BEST BUY	**2** PC ADVISOR RECOMMENDED	**3** PC ADVISOR RECOMMENDED	**4**	**5** PC ADVISOR BEST BUY
Price	**£175 inc VAT**	**£437 inc VAT**	**£50-£150 per month**	**£206 inc VAT**	**£396 inc VAT**
Website	Kyoceramita.co.uk	Canon.co.uk	Lomond.com	Xerox.co.uk	Kyoceramita.co.uk
Overall rating	★★★★½	★★★★½	★★★★½	★★★★☆	★★★★½
Technology	Mono laser	Colour laser	Colour laser	Mono laser	Colour laser
Max print resolution	1200x1200dpi	9600x600dpi	1600x1600dpi	1200x1200dpi	600x600dpi
Actual print speed	B=26.1ppm	B=23.2pp/C=16.7ppm	B=41.4ppm/C=23.1ppm	B=33ppm	B=24.8ppm/C=18.3ppm
Scan/fax facilities	None	None	None	None	None
Supported interfaces	USB 2.0	USB 2.0, ethernet	USB 2.0, ethernet	USB 2.0, ethernet, 802.11b/g	USB 2.0, ethernet
Cost per page	B=1.4p	B=1.3p C=7.5p	Variable	B=1.6p	B=1.2p/C=5.2p
Media card/auto duplex	✓✓	✗✓	✗✗	✗✓	✗✓
Input capacity	250 sheets	500 + 100 sheets	250 + 20 sheets	250 + 20 sheets	500 + 50 sheets
Dimensions	375x393x250mm	517x530x401mm	542x455x265mm	366x368x257mm	390x523x397mm
Weight	12kg	31kg	12.8kg	10kg	30kg
Warranty	2 years	1 year	1 year	1 year	2 years
Verdict	• No frills business laser • Lacks Wi-Fi and ethernet • Modest running costs • Auto-duplex support	• Immense 1,100-sheet capacity • Auto-duplex at 19.9ppm • Excellent colour depth • Secure Print	• Monthly payment plans rather than outright purchase • Stunning speed • No auto-duplex	• Strong turn of speed • Good print quality • Substantial paper capacity • Plenty of connectivity	• Blistering speed • Huge paper capacity • Colour printing isn't perfect • Hefty
FULL REVIEW	TINYURL.COM/6GG9UKV	TINYURL.COM/CCAPAJF	TINYURL.COM/CLQAQ5V	TINYURL.COM/ARCLM4J	TINYURL.COM/7QMXVZA

GLOSSARY: • B: mono • C: colour • ppm: pages per minute

>> Buying advice

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/BUX9QM0**

Blu-ray drives

	LG BH16NS40	Lite-On iHBS212	LG BP40NS20	Lite-On IHES112-115	Buffalo BR3D-12U3
	1 PC ADVISOR RECOMMENDED	2 PC ADVISOR RECOMMENDED	3	4	5
Price	£74 inc VAT	£87 inc VAT	£90 inc VAT	£50 inc VAT	£199 inc VAT
Website	Uk.lge.com	Liteonit.eu	Uk.lge.com	Liteonit.eu	Buffalotech.com
Overall rating	★★★★½	★★★★☆	★★★★☆	★★★½☆	★★★★½
Blu-ray speeds	16x -R, 8x -R DL, 2x -RE, 12x -ROM	12x -R, 8x -R DL, 2x -RE, 8x -ROM	6x -R, 6x -R DL, 2x -RE, 6x -ROM	12x -ROM	12x -R, 12x -R DL, 2x -RE, 8x -ROM
DVD speeds	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 12x -RAM, 16x -ROM	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 12x -RAM, 16x -ROM	8x ±R, 6x ±R DL, 6x -RW, 8x +RW, 5x -RAM, 8x -ROM	8x ±R, 8x ±R DL, 6x -RW, 8x +RW, 8x -ROM	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 5x -RAM, 8x -ROM
Max storage	50GB	50GB	100GB	8.5GB	50GB
Interface type	SATA (internal)	SATA (internal)	USB 2.0 (external)	SATA (internal)	USB 3.0 (external)
Label technology	LightScribe	LightScribe	None	None	None
Software	CyberLink Blu-ray Suite	CyberLink Blu-ray Suite	PowerDVD, PowerProducer	None	PowerDVD, PowerProducer
Dimensions	146x170x41mm	146x170x41mm	160x153x22mm	158x145x22mm	160x220x50mm
Weight	749g	650g	380g	700g	1.1kg
Warranty	1 year	2 years	1 year	2 years	2 years
Verdict	• Fast 16x speed • Attractive front panel • Reliable performance • Very good value	• 12-speed internal writer • Issues during testing • Noisy during operation • Average with 4x media	• Attractive external model • Maxes out at 6x BD-R (most media is only 6x) • Supports triple-layer BD-R	• Playback only • No software included with many bundles • Low price	• 12-speed external writer • Power supply required • Bulky design • Expensive
FULL REVIEW	TINYURL.COM/8YTUJEF	TINYURL.COM/65PXHUJ	TINYURL.COM/BS8UAFF	TINYURL.COM/8SYECMW	TINYURL.COM/453BX7L

Wireless routers

	Apple AirPort Express	D-Link Cloud Router N600	Cisco Linksys EA6500	Asus RT-AC66U	AVM FritzBox Fon 7390
	1 PC ADVISOR RECOMMENDED	2	3 PC ADVISOR BEST BUY	4 PC ADVISOR RECOMMENDED	5 PC ADVISOR BEST BUY
Price	£79 inc VAT	£60 inc VAT	£170 inc VAT	£170 inc VAT	£200 inc VAT
Website	Apple.com/uk	Dlink.com	Linksysbycisco.com	Uk.asus.com	Fritzbox.eu
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★½
Standards supported	802.11a/b/g/n	802.11a/b/g/n	802.11b/g/n/ac	802.11b/g/n/ac	802.11a/b/g/n
Frequency modes	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz	2.4GHz/5GHz	2.4GHz/5GHz (concurrent)
128/256bit WEP/WPA2	✓✗✓	✓✗✓	✓✗✓	✓✗✓	✓✗✓
ADSL Modem/Guest NW	✗✓	✗✓	✗✓	✗✓	✗✓
Parental cont./mobile app	✓✓	✓✓	✓✓	✓✓	✓✓
Firewall	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI
Ports	10/100 WAN, 10/100 LAN, USB	Gig WAN, 4x gig LAN, USB	Gig WAN, 4x gig LAN, 2x USB	Gig WAN, 4x gig LAN, 2x USB	10/100 WAN, 4x gig LAN, 2x USB
Average power use	Not tested	Not tested	10.2W	9W	Not tested
Throughput (near, far, ac)	94Mbps, n/a, n/a	142Mbps, 115Mbps, n/a	266Mbps, 195Mbps, 471Mbps	270Mbps, 199Mbps, 457Mbps	92Mbps, 38Mbps, n/a
Dimensions, weight	98x98x23mm, 240g	111x93x145mm, 330g	256x184x40mm, 500g	207x149x36mm, 450kg	226x160x48mm, not specified
Warranty	1 year	1 year	2 years	2 years	5 years
Verdict	• Sleek, flat and square look • Concurrent 2.4/5GHz • Extremely easy setup • Digital audio output	• Cloud features • Parental controls • Excellent value • Interesting looks	• Stunning performance • Excellent interface • Strong QoS • 802.11ac isn't cheap	• Decent value • Versatile antennae • Great for file-hosting and media streaming	• Supports landline and internet telephony • Dual-band Wi-Fi • USB port
FULL REVIEW	TINYURL.COM/6LH6OOS	TINYURL.COM/9LGFF8Y	TINYURL.COM/AWYOPYX	TINYURL.COM/BU79W64	TINYURL.COM/3QUJZBX

>> Buying advice

Blu-ray drives

A single Blu-ray Disc holds the equivalent of 35 CDs or five DVDs. It might look like a DVD, but its shorter wavelength and narrow blue laser beam allow it to hold greater capacity. It's the storage method of choice for HD and 3D video content.

External drives are easier to install, portable, and can be shared between PCs, but they will cost you considerably more than internal models, and may not be as quick.

If you opt for an internal drive, ensure you have enough space inside your PC. Most internal drives use the SATA interface, so check you've got a compatible port.

Look for a drive that also supports several DVD formats, but don't obsess about write speeds. You should be able to get 16-speed DVD writing, but it's not worth paying more to save seconds.

You may find that the Blu-ray media currently on the market isn't fast enough to enjoy your chosen drive's maximum write speeds. Six-/eight-speed BD-R capabilities are standard, but even six-speed BD-R media is still rare.

READ MORE: TINYURL.COM/70EPYL6

External hard drives

	1 Seagate FreeAgent GoFlex	2 WD My Passport Edge for Mac	3 G-Tech G-Raid Thunderbolt	4 iStorage diskAshur 256bit	5 WD My Book Thunderbolt Duo
	PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED	PC ADVISOR GOLD		
Price	£170 inc VAT	£60 inc VAT	£575 inc VAT	£172 inc VAT	£400 inc VAT
Website	Seagate.com	Wdc.com/en	G-technology.com	Istorage-uk.com	Wdc.com
Overall rating	★★★★☆	★★★★½	★★★★½	★★★★☆	★★★★☆
Capacity tested	3TB	500GB	8TB	500GB	4TB
Capacity range	1TB to 3TB	500GB	4TB to 8TB	250GB to 1.5TB	4TB to 6TB
Disk size	3.5in	2.5in	3.5in	2.5in	3.5in
Spin speed	7,200rpm	5,400rpm	7,200rpm	5,400rpm	7,200rpm
Transfer speed	94MBps (USB 3.0)	94Mbps (USB 3.0)	329MBps	94Mbps (USB 3.0)	223MBps
Encryption	192bit	Password protection	None	256bit	None
Other interfaces	Optional FireWire 800	None	None	None	None
Software	Memo Backup	WD utilities	None	None	WD Drive Utilities
Dimensions	158x124x44mm	112x83x11mm	235x130x85mm	19x85x120mm	165x157x99mm
Weight	1kg	164g	2.3kg	176g	2.2kg
Warranty	2 years	3 years	3 years	1 year	3 years
Verdict	• Great speed for USB 3.0 • Great value for capacity • Separate storage drive and USB 3.0 dock	• Not just for Macs • Password protection • Faultless build quality • Great value	• Fast Thunderbolt interface • Real-world speed can exceed 200MBps • Pricey, but huge capacity	• 256bit encryption • PINs, self-destruct passwords, anti-hacker tools • 2.5in disk stifles speed	• Thunderbolt interface • Not as fast as some Thunderbolt Raid drives • Quiet and cool operation
FULL REVIEW	TINYURL.COM/BN2Z92F	TINYURL.COM/BMG7SW9	TINYURL.COM/CXEF6MH	TINYURL.COM/CX3DNHY	TINYURL.COM/C6TADAH

NAS drives

	1 Synology DS413	2 Synology DS412+	3 Zyxel NSA325	4 Iomega StorCenter ix2-200	5 Qnap TS-419P II
	PC ADVISOR RECOMMENDED	PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED		PC ADVISOR RECOMMENDED
Price	£400 inc VAT (diskless)	£470 inc VAT (diskless)	£90 inc VAT (diskless)	£110 inc VAT (diskless)	£390 inc VAT (diskless)
Website	Synology.com	Synology.com	Zyxel.co.uk	Go.iomega.com	Qnap.com
Overall rating	★★★★☆	★★★★½	★★★★½	★★★½☆	★★★★☆
Drive bays	4	4	2	2	4
Processor	1,067MHz Freescale P1022 dc	2.13GHz Intel Atom D2700	1.6GHz processor	1.6GHz ARM Marvell 6282	2GHz Marvell 88F66282
Memory	1GB DDR3	1GB DDR3	512MB DDR2	256MB DDR3	512MB DDR3
Remote access	✓	✓	✓	✓	✓
eSATA	✓	✓	✗	✗	✓
USB port	2x USB 3.0, 1x USB 2.0	2x USB 3.0, 1x USB 2.0	2x USB 2.0	1x USB 2.0	4x USB 2.0
Raid options	0/1/5/5+s/6/10/JBOD	0/1/5/5+s/6/10/JBOD	0/1/JBOD	0/1/JBOD	0/1/5/6/10/JBOD
Software	DSM 4.1	DSM 4.1	zPilot	Iomega StorCenter Manager	TurboNAS 3.6.1
Dimensions	165x203x233mm	165x203x233mm	108x205x147mm	202x99x149mm	177x180x235mm
Weight	2kg	2kg	1.8kg	2.5kg	3kg
Warranty	2 years	2 years	1 year	3 years	2 years
Verdict	• Less powerful than DS412+ • CPU requires less cooling • Versatile, friendly interface • Cloud Station indispensable	• Superb read/write performance eclipses DS413 • Powerful options • Attractive and intuitive	• Cheapest drive here • Decent performance and features for the money • Complex interface	• Low price • Cloud/social media features • Relatively slow transfers • Unattractive admin panel	• Well priced • Robust cabinet construction • Solid performance • Old but effective interface
FULL REVIEW	TINYURL.COM/B562XW3	TINYURL.COM/6UUL4DE	TINYURL.COM/7B9EPW8	TINYURL.COM/BZ2DK38	TINYURL.COM/72N4GBN

>> Buying advice

NAS drives

NAS drives are ideal for businesses or home users who require large amounts of dependable and secure storage, accessible to anyone logged into the local wired or wireless network.

Instead of connecting a hard disk directly to one PC, the NAS is connected to a network via a router. Many NAS drives are typically supplied without disks, letting you add your own selection.

Most NAS drives allow virtual partitions, letting you keep data such as PC backups separate from media files. Home-oriented NAS drives also include media servers to allow easy streaming of content.

To augment data integrity, access speed, capacity, or all three, individual hard disks can be combined in a number of Raid configurations. Raid 0 '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

PC ADVISOR TEST CENTRE

Projectors	1 Epson EB-1945W	2 ViewSonic PJD7820HD (PC ADVISOR RECOMMENDED)	3 Vivitek Qumi Q2	4 Dell M110	5 ViewSonic Pro8300
Price	£1,300 inc VAT	£740 inc VAT	£395 inc VAT	£345 inc VAT	£850 inc VAT
Website	Epson.co.uk	Viewsoniceurope.com/uk	Vivitek.co.uk	Dell.co.uk	Viewsoniceurope.com/uk
Overall rating	★★★★½	★★★★½	★★★★☆	★★★★☆	★★★★☆
Projection technology	3LCD	DLP	DLP	DLP	DLP
Resolution (pixels)	1280x800	1920x1080	1280x800	1280x800	1920x1080
Brightness[1], Contrast	4200, 3,000:1	3,000, 15,000:1	300, 2,500:1	300, 10,000:1	3,000, 4,000:1
Image size	280in	300in	30-90in	80in	300in
Supported aspect ratios	16:10, 16:9, 4:3	16:9, 4:3	16:10, 16:9, 4:3	16:10, 16:9, 4:3	16:9, 4:3
Noise levels (dB)	37 (29 eco)	35 (29 eco)	32 (28 eco)	36 (32 eco)	33 (29 eco)
Connections	VGA, HDMI, DP, CM, USB, ET	VGA, HDMI, CM, USB	VGA, HDMI, USB	VGA, HDMI, CM, CP, USB	VGA, HDMI, SV, USB
Lamp/lamp life	Not supplied/2,500 hrs	Not supplied/5,000 hrs	LED/30,000 hrs	LED/10,000 hrs	230W/4,000 hrs
Dimensions	377x271x108mm	268x221x84mm	162x102x32mm	105x104x37mm	332x110x264mm
Weight	3.9kg	2.1kg	635g	360g	3.9kg
Warranty	5 years	3 years	3 years	2 years	3 years
Verdict	• Incredibly easy to find optimum image quality • Strong spec and quality • Not particularly portable	• 3,000 Ansi lumens • Short-throw lens • Good colour depth • 3D option	• Now fantastic value • Lightest model here • DLP-Link enables 3D display • Exceptional lamp life rating	• Ultra-small and -light • Good colour • Long-life LED lamp • Remote control costs extra	• Good brightness levels • Flexible connectivity • Lacks colour depth, and cinematic content suffers
FULL REVIEW	TINYURL.COM/CP95P7G	TINYURL.COM/D2HO4CV	TINYURL.COM/3TXMWPK	TINYURL.COM/77S8D6D	TINYURL.COM/9PU6XJS

[1]Ansi lumens GLOSSARY: • CM: component • CP: composite • ET: ethernet • SV: S-Video

Interchangeable -lens cameras	1 Panasonic DMC-G3 (14-42mm) (PC ADVISOR RECOMMENDED)	2 Nikon D5100 (18-55mm) (PC ADVISOR BEST BUY)	3 Nikon D5200 (18-55mm)	4 Canon EOS 600D (18-55mm)	5 Pentax K-01 (18-55mm)
Price	£330 inc VAT	£430 inc VAT	£620 inc VAT	£500 inc VAT	£425 inc VAT
Website	Panasonic.co.uk	Nikon.co.uk	Nikon.co.uk	Canon.co.uk	Pentax.co.uk
Overall rating	★★★★½	★★★★☆	★★★★☆	★★★★☆	★★★½☆
Megapixel rating	16Mp	16.2Mp	24.1Mp	18Mp	16.28Mp
Maximum resolution	4592x3448 pixels	4923x3264 pixels	6000x4000 pixels	5184x3456 pixels	4928x3264 pixels
Optical zoom	3x	3x	3x	3x	N/A
Maximum aperture	f3.5-f5.6	f3.5-f5.6	N/A	f3.5-f5.6	N/A
LCD size	3in	3in	3in	3in	3in
Media card	SD/SDHC/SDXC	SD/SDHC/SDXC	SD/SDHC/SDXC	SD/SDHC/SDXC	SD/SDHC/SDXC
Battery/life	1x lithium-ion/270 shots	1x lithium-ion/660 shots	1x lithium-ion/660 shots	1x lithium-ion/440 shots	1x lithium-ion/540 shots
ISO range	100 to 6,400	100 to 6,400	100 to 6400	100 to 6,400	100 to 12,800
Dimensions	115x84x47mm	124x97x79mm	129x98x78mm	133x100x80mm	121x59x79mm
Weight	336g	510g	555g	570g	480g
Warranty	3 years	3 years	3 years	1 year	1 year
Verdict	• Great dSLR alternative • Rotating touchscreen • Strong video-capture mode • Very fast autofocus	• Cheaper, but offers less detail than the D5200 • Suitable for all levels • Good choice of lenses	• Easy to use • Excellent image quality • Strong build quality • Versatile 3in screen	• Now at an excellent price • Top-notch photo results • Fully auto/manual modes • Strong video capture	• K-mount lens • Impressive image quality • No optical viewfinder • Slower than digital SLRs
FULL REVIEW	TINYURL.COM/7JCXJCR	TINYURL.COM/6UTE9KK	TINYURL.COM/AJE7VWA	TINYURL.COM/72STE88	TINYURL.COM/BOAJTO8

>> Buying advice

Projectors

Projectors designed for home use don't tend to be as bright as office models – anything offering fewer than 1,000 Ansi lumens will be usable only in a dark room. And don't forget that the brightness drops as the image size increases.

The cheapest home-cinema models offer a 720p resolution, but you'll notice the extra detail of 1080p when watching Blu-ray films on a large screen.

If you can't place the projector square-on to the screen, look for a model with lens shift. Keystone correction is a cheaper alternative, altering the image digitally, but degrading quality in the process.

A zoom function offers more flexibility over how far from the screen you can site the projector. If it's to go in a small room, get a short-throw model that produces a large image over a short distance.

DLP projectors offer better contrast and punchier colours than LCD models, but can suffer from the distracting and sometimes nauseating 'rainbow effect'.
READ MORE: TINYURL.COM/6MTMWJX

Sub-£150 graphics cards

	1 Sapphire HD 7770	2 MSI GeForce GTX 650	3 Sapphire Radeon HD 7750	4 MSI GeForce GTX 650 Ti OC	5 Gigabyte GeForce GT 640 OC
Price	£90 inc VAT	£90 inc VAT	£80 inc VAT	£120 inc VAT	£90 inc VAT
Website	Sapphiretech.com	Uk.msi.com	Sapphiretech.com	Uk.msi.com	Uk.gigabyte.com
Overall rating	★★★★☆	★★★★☆	★★★½☆	★★★½☆	★★★☆☆
Graphics processor	AMD Radeon HD 7770	nVidia GeForce GTX 650	AMD Radeon HD 7750	nVidia GeForce GTX 650 Ti	nVidia GeForce GT 640
Installed RAM	1GB GDDR5	1GB GDDR5	1GB GDDR5	1GB GDDR5	2GB DDR3
Memory interface	128bit	128bit	128bit	128bit	128bit
Core/memory clock	1GHz/1,125MHz	1071MHz/1250MHz	800MHz/1,125MHz	954MHz/1,350MHz	1,050MHz/1,800MHz
Ramdac	400MHz	400MHz	400MHz	400MHz	400MHz
Stream processors	640	384	512	768	384
Power connectors	1x 6-pin	1x 6-pin	None	1x 6-pin	None
Interface	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express
DirectX	11.1	11	11.0	11.0	11.0
Digital interface	DVI, HDMI, Mini-DisplayPort	2x DVI, Mini-HDMI	DVI, HDMI, DisplayPort	2x DVI, 1x Mini-HDMI	2x DVI, HDMI
Warranty	3 years	3 years	2 years	2 years	3 years
Verdict	• Faster than 650 and 7750 • Decent value for money • Plenty of stream processors • Low sound levels	• Marginally slower than 7770 • Superb overclocking • Very different to 650 Ti • MSI version has second fan	• Cheapest card in the chart • Low specs include 800MHz core clock • Lacks power in some games	• Plenty of performance • Good set of specifications • Hampered by 128bit memory interface	• Costs more than 7750 • Falls far behind 7770 • The best version of this card • Three digital connectors
FULL REVIEW	TINYURL.COM/BWJ7BL9	TINYURL.COM/AKT2XOM	TINYURL.COM/7ZB5OE3	TINYURL.COM/8Z5BDCZ	TINYURL.COM/9OSWMK2

£151+ graphics cards

	1 PC ADVISOR RECOMMENDED KFA2 GeForce GTX 670	2 Zotac GeForce GTX 680	3 Asus GTX 660 Ti	4 Asus HD 7870 DirectCU II	5 XFX 7970 3GB GDDR5
Price	£300 inc VAT	£372 inc VAT	£240 inc VAT	£200 inc VAT	£320 inc VAT
Website	kfa2.com	Zotac.com	Uk.asus.com	Uk.asus.com	Xfxforce.com
Overall rating	★★★★½	★★★★½	★★★★☆	★★★½☆	★★★½☆
Graphics processor	nVidia GeForce GTX 670	nVidia GeForce GTX 680	nVidia GeForce GTX 660 Ti	AMD Radeon HD 7870	AMD Radeon HD 7970
Installed RAM	2GB GDDR5	2GB GDDR5	2GB GDDR5	2GB GDDR5	3GB GDDR5
Memory interface	256bit	256bit	192bit	256bit	284bit
Core/memory clock	915MHz/1,502MHz	1,006MHz/1,502MHz	915MHz/6,008MHz	1GHz/1.2GHz	925MHz/1,375MHz
Ramdac	400MHz	400MHz	400MHz	400MHz	400MHz
Stream processors	1,344	1,536	1,344	1,280	2,048
Power connectors	2x 6-pin	2x 6-pin	2x 6-pin	2x 6-pin	1x 6-pin, 1x 8-pin
Interface	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express
DirectX	11.0	11.0	11.0	11.1	11.1
Digital interface	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	DVI, HDMI, 2x Mini-DP	DVI, HDMI, 2x Mini-DisplayPort
Warranty	2 years	5 years	2 years	2 years	2 years
Verdict	• KFA2 version best value • Almost on a par with 7970 • Low power consumption • Good memory bandwidth	• Fastest single-GPU card • Low power consumption • Price drop to 7970 weakens this card's value for money	• Faster than 7870 • Nicely priced • Can boost clock to 1,058MHz • Compares well to GTX 670	• GTX 660 Ti is better value • Cheaper than GTX 670, but behind on framerates • Modest power consumption	• Good performance • Not as powerful or as efficient as GTX 680 • Close to 7870 on value
FULL REVIEW	TINYURL.COM/CRDW78J	TINYURL.COM/C6C37QO	TINYURL.COM/D5BV2NG	TINYURL.COM/BUFMAFF	TINYURL.COM/6UZRVXC

>> Buying advice

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

PC ADVISOR TEST CENTRE

Sub-£200 flat-panels

	1 BenQ GW2750HM	2 ViewSonic VP2365-LED	3 AOC i2353Fh	4 ViewSonic VX2460H-LED	5 Hanns-G HL249DPB
	PC ADVISOR RECOMMENDED		PC ADVISOR GOLD		PC ADVISOR RECOMMENDED
Price	£180 inc VAT	£175 inc VAT	£145 inc VAT	£157 inc VAT	£120 inc VAT
Website	Benq.co.uk	Viewsoniceurope.com/uk	Aoc.co.uk	Viewsoniceurope.com/uk	Hannsg.com
Overall rating	★★★★☆	★★★★☆	★★★★½	★★★½☆	★★★★☆
Screen size	27in	23in	23in	23.6in	23.6in
Panel type	Vertical alignment	In-plane switching	In-plane switching 3D	Twisted nematic	Twisted nematic
Native resolution	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels
Pixel pitch	0.31mm	0.27mm	0.27mm	0.27mm	0.27mm
Brightness	313cd/m²	238cd/m²	225cd/m²	250cd/m²	247cd/m²
Static contrast ratio	1,530:1	681:1	666:1	710:1	740:1
Response time	6ms	6ms	5ms	5ms	5ms
Ports	HDMI, DVI, VGA	DVI	2x HDMI, VGA	2x HDMI	DVI
Dimensions	654x489x191mm	548x433x250mm	550x388x188mm	581x447x194mm	563x211x403mm
Weight	5.6kg	5.4kg	5.6kg	3.5kg	3.8kg
Warranty	3 years	3 years	3 years	3 years	3 years
Verdict	• Massive 27in screen • VA panel is excellent • Superb contrast ratios • Colour accuracy not perfect	• Better value than ever • Great quality • Good viewing angles • DVI port only	• Wide viewing angles • Excellent colours • Attractive, slimline deign • No DVI connection	• Slim and stylish looks • Good range of inputs • One of the better examples of TN technology	• Low price • Pleasing image quality • Low power consumption • Only a TN panel
FULL REVIEW	TINYURL.COM/BQKT65S	TINYURL.COM/5WMJLR9	TINYURL.COM/7TWLB2A	TINYURL.COM/CSQ2H7P	TINYURL.COM/C95859A

£200+ flat-panels

	1 Dell S2440L	2 Asus PA248Q	3 AOC I2757Fm	4 ViewSonic VP2765-LED	5 Philips 248X3LFHSB
	PC ADVISOR RECOMMENDED				
Price	£201 inc VAT	£335 inc VAT	£230 inc VAT	£360 inc VAT	£210 inc VAT
Website	Dell.co.uk	Uk.asus.com	Aoc.co.uk	Viewsoniceurope.com/uk	Philips.co.uk
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★½☆	★★★½☆
Screen size	24in	24in	27in	27in	23.6in
Panel type	Vertical Alignment	In-plane switching	In-plane switching	Advanced MVA	Twisted nematic
Native resolution	1920x1080 pixels	1920x1200 pixels	1920x1080 pixels	1920x1080 pixels	1920x1080 pixels
Pixel pitch	0.28mm	0.27mm	0.31mm	0.31mm	0.27mm
Brightness	239cd/m²	201cd/m²	237cd/m²	1,200cd/m²	326cd/m²
Static contrast ratio	1,200:1	630:1	660:1	378:1	800:1
Response time	6ms	6ms	5ms	25ms	2ms
Ports	HDMI, VGA	4x USB, HDMI, DVI, DP, VGA	2x HDMI, VGA	DVI, DisplayPort	2x HDMI
Dimensions	568x191x418mm	557x416x235mm	622x449x130mm	642x365x474-608mm	578x443x194mm
Weight	3.6kg	6.4kg	5.7kg	8.5kg	5.1kg
Warranty	3 years	3 years	3 years	3 years	3 years
Verdict	• Premium build quality • Very good VA panel • Excellent contrast ratio • Calibrate for best results	• For graphics professionals • Good control over image • Very accurate colour • 16:10 contrast ratio	• Nice 27in IPS panel • Versatile viewing angles • MHL Android hook-up • Base can be removed	• Large 27in display • Low resolution for size • Poor viewing angles • Slow response for games	• Graceful design • Illuminated Lightframe bezel reduces eye fatigue • Twisted nematic panel
FULL REVIEW	TINYURL.COM/CXWJJLM	TINYURL.COM/CPYX7MQ	TINYURL.COM/C53K8KP	TINYURL.COM/86T3PFM	TINYURL.COM/6MJA2NS

>> Buying advice

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

JIM MARTIN

What to expect from the next version of Windows

What will Microsoft do with Windows 9? It's a question on many people's lips, and the rumour mill is going into overdrive with release dates, new features and more.

One thing's for certain: Microsoft is moving to a yearly cycle for new releases. The firm already does this with Windows Phone, and Windows RT needs regular updates if it is to compete with iOS and Android.

There are plenty of unknowns, however. Anyone who has for more than a few minutes used Windows 8 will already know how unhappily the two sides of the OS co-exist. The traditional desktop doesn't make sense on a tablet, while the Modern UI can go virtually unused on a desktop PC.

Eventually, Microsoft is likely to want to remove the old desktop, and Windows 9 may be the platform it chooses on which to make the change.

Those who want or need to use applications that require the old desktop can stick with Windows 7 or 8. They won't be forced to upgrade for a good few years (after all, consider how many users are still running XP!) and, by that time, who knows in what state the Modern UI will be. Developers might have worked out how to make even the most complex apps touch-friendly, or we might end up with a separate business version of Windows where the keyboard and mouse remain king.

Windows 9 could usher in a new pricing strategy, too. Apple has for a while now encouraged users to migrate to the latest version of its desktop OS X with inexpensive upgrades, while iOS upgrades are free.

It's possible that Windows 9 could be a free upgrade from Windows 8, while Windows 7 users might first have to upgrade to Windows 8.

Leaked builds of the so-called Windows Blue update hint at what we can expect from Windows 9. The Start screen will be more customisable and easier to use. There's likely to be new gestures and possibly support for the Windows version of Kinect. Who knows: devices may even appear with Kinect built-in (3D gestures should require only two webcams).

It also seems that Microsoft is addressing the way multiple apps share the screen – 'snapping' is far too limiting, especially with larger screens.

Crucially, though, Windows 9 tablets will need to be much cheaper. Apple and Google currently lead the way, offering a good range of tablets at less than £400. The same can't be said of Microsoft. ⊠

Next issue

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Hey, diddle, diddle,
the cat and the fiddle,

The cow jumped
over the moon;

The little dog laughed
to see such sport,

And the dish ran away
with the spoon.

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