

HOW TO: HOW TECHNOLOGY CAN HELP
YOU GET FIT AND SHED POUNDS

**EXPERT ADVICE
YOU CAN TRUST**

PC ADVISOR

ULTIMATE PCs FOR SPEED & POWER

53 fastest ever PCs & laptops inside

**PCs FOR EVERY
BUDGET FROM
£380**

+ Why PCs beat
the Xbox One & PS4



ISSUE 225 **APRIL 2014**
IDG | UNITED KINGDOM

**Browse the web
anonymously**

**The best FREE VPN
services revealed**

**Hidden features in
Windows 8.1**

24 reasons
to update
today!





Toshiba proud sponsor of Government Growth Voucher marketplace.

THE RIGHT PACKAGE FOR BUSINESS



3 YEAR

Gold on-site
warranty



3 YEAR

**Enterprise
Nation**
Membership



3 YEAR

Support UK
call centres



NEXT

Day UK wide
delivery



FREE

Power
adaptor &
carry case

3 YEARS PEACE OF MIND COMPUTING

Whether you're a start-up, small or medium size business our SMB recommends business laptops will help you improve the way you work. Furthermore when you buy a qualifying Toshiba recommends for SMB laptop and register online we'll give you our exclusive 3 year peace of mind package.

To find out more visit www.toshiba.co.uk/smb

TOSHIBA
Leading Innovation >>>

SMB customers only. Valid for purchases between 1st January 2014 and 31st March 2014. Special Bids excluded from this promotion.

PC ADVISOR

Editor Jim Martin
Technical Editor Andrew Harrison
Managing Editor Marie Brewis
Art Director Mandie Johnson
Production Editor Rob Woodcock
Multimedia Editor Dominik Tomaszewski
Senior Staff Writer Chris Martin
Staff Writer Ashleigh Allsopp
Online Editor David Court
Online Editor David Price
Associate Editor Karen Haslam
Associate Editor Neil Bennett
Forum Editor Peter Thomas
Helproom Editor Paul Monckton
Games Editor Alec Meer
Editor-In-Chief Matt Egan

jim_martin@idg.co.uk
andrew_harrison@idg.co.uk
marie_brewis@idg.co.uk
mandie_johnson@idg.co.uk
rob_grant@idg.co.uk
dominik_tomaszewski@idg.co.uk
chris_martin@idg.co.uk
ashleigh_allsopp@idg.co.uk
david_court@idg.co.uk
david_price@idg.co.uk
karen_haslam@idg.co.uk
neil_bennett@idg.co.uk
moderator@idg.co.uk
helproom@idg.co.uk
games@idg.co.uk
matt_egan@idg.co.uk

Contributors

David Bayon, Mike Bedford, Michael Burns, Martyn Casserly, Brad Chacos, Martyn Clayden, Barry Collins, Cliff Joseph, Steve May, Robin Morris, Agam Shah, Bob Shelmerdine, John Taylor, Roland Waddilove, Simon Williams

Advertising

Head Of Advertising Tom Drummond
Account Manager Edward Longmate
Sales Executive Lucie Gillespie

tom_drummond@idg.co.uk
edward_longmate@idg.co.uk
lucie_gillespie@idg.co.uk

Marketing

Marketing Manager Ash Patel
Head of Marketing Design James Walker
Marketing Software Manager Letitia Austin
Subscriptions Customer Services

ash_patel@idg.co.uk
james_walker@idg.co.uk
letitia_austin@idg.co.uk
pcadvisor@subscription.co.uk

Online

Online Development Manager Adrian Black
Web Developer Victor Chong
Web Developer Dominik Koscielak

webmaster@pcadvisor.co.uk
Junior Developer John Copsey
Junior Developer Aaron Bery

Accounts

Financial Director Chris Norman
Credit Controller Dawnett Gordon
Purchase Ledger Clerk Lyn McNicol
Management Accountant Parit Shah

chris_norman@idg.co.uk
dawnett_gordon@idg.co.uk
lyn_mcnicol@idg.co.uk
parit_shah@idg.co.uk

Publishing

Publishing Director Simon Jary
Managing Director Kit Gould

sj@idg.co.uk
kit_gould@idg.co.uk

Subscribe online:
tinyurl.com/subscribepeca
 Subscribe by phone:
0844 844 0232

Subscribe to digital editions:
pcadvisor.co.uk/magazines
 Subscription enquiries:
pcadvisor@servicehelpline.co.uk

	CWO	DD
12 issues	£37.99	£35.88
Six issues	£24.99	£19.99
Europe (12 issues)	£100	£100
Rest of world (12 issues)	£125	£125

What do you think of this issue of PC Advisor? We welcome feedback - email Jim Martin at jim_martin@pcadvisor.co.uk and include the issue number in the subject heading



PC Advisor is published by IDG UK
 IDG UK, 101 Euston Road, London NW1 2RA. Tel: 020 7756 2800
 Printer: Wyndeham Press Group Ltd 01621 877 777
 Distribution: Seymour Distribution Ltd 020 7429 4000

No material may be reproduced in whole or part without written permission. While every care is taken, the publisher cannot be held legally responsible for any errors in articles, listings or advertisements. All material copyright IDG UK 2014



JIM
MARTIN



Honestly, you'll love Windows 8.1

RT is doomed but Windows 8.1 is better than ever

If you haven't seen Microsoft's latest TV ad then you're missing something spectacular. It claims Windows 8 isn't as bad as you think - you might even like it. Microsoft might as well have admitted that the tiled interface has put off a lot of people from buying a laptop, PC or tablet running Windows 8.

It's a similar story if you head to Microsoft's website. The headline - 'Honestly, you'll love the new Windows' - smacks of desperation. It appears to be an attempt to win back the trust of users who have been scared off by Windows 8's radical look.

As I've said many times before, Microsoft's biggest mistake was that every single Windows 8 advert showed only the brightly coloured tiles of the Modern interface. There was no hint that the familiar Windows desktop remained and that you could still run your old programs and use your PC just as you've always used Windows.

Windows RT confused things further. This version of Windows, used on ARM-based tablets including Microsoft's own Surface RT, doesn't let you install or run your old programs. Yet it looks identical to Windows 8 and even has a desktop and runs Microsoft Office.

Unless you know this, it's all too easy to walk into PC World and buy a Windows RT device thinking you're getting full-blown Windows. This month I tested a Lumia 2520 tablet, which is Nokia's alternative to the Surface. It, too, runs Windows RT, and comes with Office on the desktop.


Unlike an Android tablet or iPad, you can't simply copy from your PC your photos, videos and music via USB. Instead, you must sync everything via the cloud or your local Wi-Fi network (impractical with tens of gigabytes) or plug in a USB drive as you would with a laptop.

I remain entirely unconvinced that Windows RT can survive. RT-based tablets are too expensive, too confusing and lack the choice of apps you get with an Android tablet or an iPad.

Windows 8 is a different prospect, though. The 8.1 update has addressed many of the operating system's original problems, making it a platform I'm happy to use every day. You can boot straight to the desktop, disable hot corners and tweak plenty of settings to make it work exactly the way you want.

On page 80 we reveal 24 of the best hidden features in Windows 8.1. Once you've found them, you'll appreciate the OS a whole lot more. ☒

NEWS & ANALYSIS

- 8 Latest technology news
- 12 The rise of Bitcoin 
- 14 Console or gaming PC: what's best for gamers?
- 18 Google to standardise in-car tech
- 19 Should cars have mobile apps?
- 20 10 cool, weird & stupid things from CES 2014
- 22 Intel set to bring DDR4 DRAM to computers
- 24 What is the Internet of Things?

REGULARS & OFFERS

- 3 Welcome
- 3 Contacts
- 28 New Products
- 120 Cover Disc+



124 Subscribe

146 Outbox

Subscribe to PC Advisor and
SAVE 50%
SEE PAGE 124

FEATURES & GROUP TESTS



- 64 **GAMING PCs**
- 72 Android security apps
- 80 24 hidden features in Windows 8.1
- 89 Get fit with tech kit
- 94 Battle of the browsers
- 99 Best free VPN services

REVIEWS

**TEST
CENTRE**

HARDWARE

- 36 HP EliteBook 840 G1
- 37 Acer Aspire V5-122P
- 38 Dell Precision M4800 Mobile Workstation
- 39 Schenker XMG C703
- 40 Chillblast Photo OC
- 41 Lenovo ThinkPad Yoga
- 42 Toshiba Encore WT8-A-102
- 43 Advent Vega Tegra Note 7
- 44 Sony PlayStation 4
- 45 Fitbit Force
- 46 WD My Cloud EX4
- 46 Samsung HW-F551
- 47 Swann DVR-1500 & Pro-510
- 48 XFX Radeon R9 290X Boost Edition
- 49 BenQ BL2411
- 50 Samsung 840 EVO mSATA 500GB

APPS

- 52 Cut the Rope 2
- 53 Dumb Ways To Die
- 53 Fotor

SOFTWARE

- 54 Slysoft AnyDVD HD
- 54 Serif WebPlus X7
- 55 Avanquest InPixio Photo Maximiser
- 56 VMware Fusion 6
- 57 Risk of Rain
- 58 Lego Marvel Super Heroes

59



BUSINESS

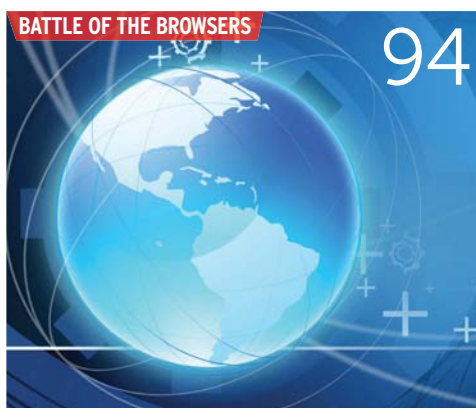
- 59 Apple Mac Pro
- 60 Dell C2665dnf
- 61 Canon Pixma MG5550

GAMING PCs

- 66 Aria FX-Viper 8320
- 66 Chillblast Fusion Probe
- 67 CyberPower Infinity Perseus XT
- 67 Quiet PC Serenity Mini Gamer
- 68 Wired2Fire Diablo GTX - M
- 69 YoYoTech Warbird RS2

ANDROID ANTIVIRUS

- 74 Avast Mobile Security & Anti-virus
- 74 Ikarus Mobile Security
- 75 Kaspersky Internet Security
- 75 Qihoo 360 Mobile Safe
- 76 Symantec Norton Mobile Security
- 76 Trend Micro Mobile Security



HOW TO **Tech Help**

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

102 Helproom

107 Change your power settings



108 Secure your online data

110 Set up virtual desktops



112 Expand your Wi-Fi network

114 Rip DVDs for free



116 Sell your photos with Picfair

118 Sync Google Maps routes

ON THE COVER

64



120

99

89

80

TEST CENTRE

TOP 5 CHARTS: BUYER'S GUIDE

- 127 Ultraportable laptops
- 128 Sub-£500 laptops
- 129 £501-£1,000 laptops
- 130 £1,001+ laptops
- 131 Tablets
- 132 Smartphones
- 134 Mini PCs
- 135 All-in-one PCs
- 136 Office PCs
- 138 Family PCs
- 139 Security software
- 140 Blu-ray drives
- 140 Wireless routers
- 141 Printers
- 142 USB & NAS drives
- 143 Projectors
- 143 Solid-state drives
- 144 Graphics cards
- 145 Flat-panel displays



CHRIS
MARTIN

WINDOWS 9 EXPECTED IN 2015

Windows 8 is looking like the next Vista as Microsoft schedules another update to its Windows OS

Microsoft's next major Windows 8 update, codenamed 'Threshold', will be Windows 9.

The software giant will make the announcement at this year's Build conference in April 2014, according to Winsupersite. The new version of Microsoft's flagship operating system is planned to launch in April 2015. Is Microsoft backtracking on the failures of Windows 8?

The Build conference is expected to be heavily focused on Windows Phone 8 and Xbox, but the biggest news will surround the Threshold Windows update. The software giant will make its first 'vision' announcement since 2003.

Build will take place shortly after Microsoft's internal restructuring following the retirement of CEO Steve Ballmer.

Winsupersite's Paul Thurrott said: "To distance itself from the Windows 8 debacle, Microsoft is planning to drop the Windows 8 name and brand this next release as Windows 9. That could change, but that's the current thinking."

What's in Windows 9?

Microsoft won't give developers an early alpha release of Threshold at Build 2014 because it will not go into production until after the conference. The firm will release a service pack-type update to Windows 8.1 this year called Update 1 (aka GDR1).

Threshold, or Windows 9, looks likely to be the version of the OS that will herald the return of the Start menu and will add the ability to run Modern UI apps on the desktop alongside regular software. Microsoft is still responding to complaints after the transition from Windows 7 to Windows 8 in line with these complaints.

The Start menu was dropped for Windows 8 and, although a Start button arrived with Windows 8.1, it simply takes users to the tiled Modern interface. The original Start menu allowed users to open applications and search the computer.

Windows expert Mary Jo Foley said that the Threshold update will bring desktop Windows, Windows Phone 8 and Xbox One closer together, creating a "one Windows" vision.

"My theory is that Threshold is the release that will put Microsoft on the threshold of a truly consolidated OS," agreed Thurrott.

Microsoft's EVP of Devices, Julie Larson-Green, recently admitted that the firm has too many operating systems and would not have three going forward.

They already share the same core, but Threshold will add another level of commonality across Microsoft's various Windows-based platforms. Threshold may introduce three primary SKUs:

a 'modern' consumer Windows similar to RT, a traditional x86 PC edition and an enterprise product.

The return of the Start menu is one of two major changes: users will also be given the option run Modern UI apps in floating windows on the desktop.

XP SUPPORT EXTENDED

Microsoft reiterated that it will discontinue support for Windows XP on 8 April 2014 but, for those who can't make the transition in time, there's some hope. The firm also said that it will continue to provide updates to its antimalware signatures and engine for Windows XP users until 14 July 2015 - more than a year after XP support officially ends.

For consumers, the engine in question is Microsoft Security Essentials. For enterprise customers, the change applies to System Center Endpoint Protection, Forefront Client Security, Forefront Endpoint Protection and Windows Intune running on Windows XP.

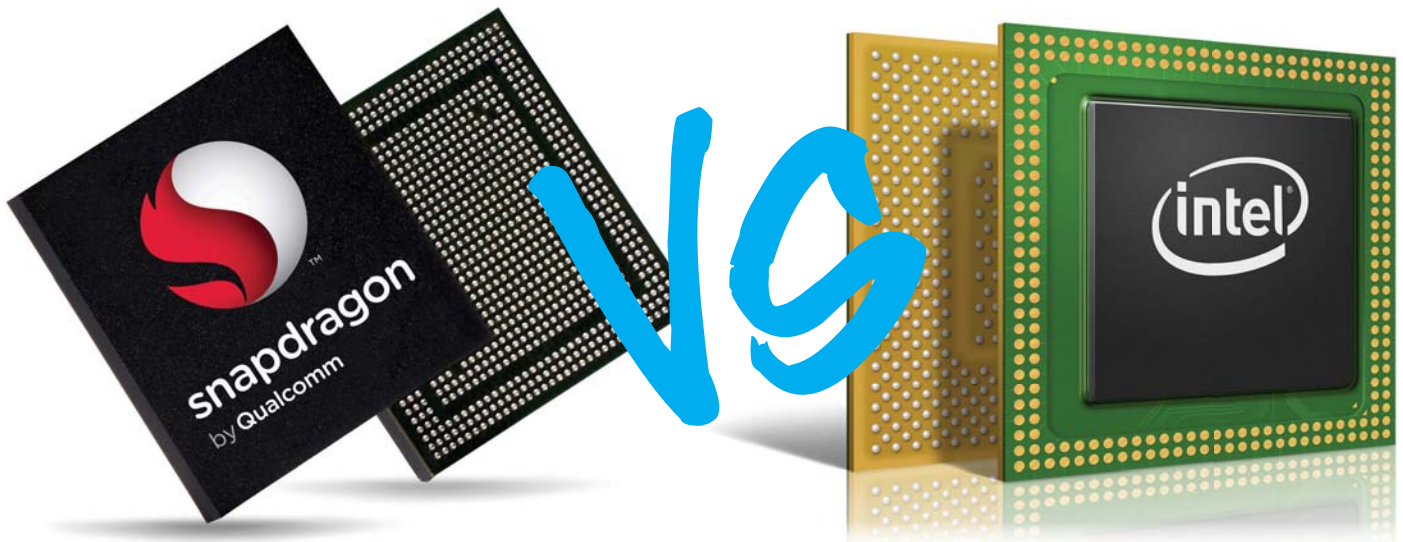
Microsoft said that it made the decision to assist customers with their migrations away from Windows XP.

Keep up to date with PC Advisor news:

>> pcadvisor.co.uk/news >> twitter.com/pcadvisor >> facebook.com/pcadvisor >> mobile.pcadvisor.co.uk
>> pinterest.com/pcadvisor >> plus.google.com/+PCAdvisor >> youtube.com/pcadvisor

CHIPS AT THE READY: iPHONE 5s LEADS TO BIT BATTLE

Intel and Qualcomm announce their first 64-bit processors and software for mobile devices



Qualcomm

Qualcomm has announced that the Snapdragon 410 is its first 64-bit processor for smartphones and tablets. With the iPhone 5s holding the title of first 64-bit smartphone, it was never going to be long before others followed suit.

The product number may cause some confusion as it's lower than the current Snapdragon 600 and 800 chips, but the 410 is aimed at budget smartphones in emerging markets.

A major feature is integrated 3G and 4G LTE with multiband and multimode support, which it is aiming mainly at China. Qualcomm said it aims to bring this functionality to its entire Snapdragon range of processors.

"By offering 4G LTE variants to its entry-level smartphone line-up, Qualcomm Technologies ensures that emerging regions are equipped for this transition while also having every major 2G and 3G technology available to them," said Qualcomm.

"We are excited to bring 4G LTE to highly affordable smartphones at a sub-\$150 price point with the introduction of the Snapdragon 410 processor," said Jeff Lorbeck, Qualcomm's senior vice president and chief operating officer. "The Snapdragon 410 chipset will also be the first of many 64-bit processors as Qualcomm helps lead the transition of the mobile ecosystem to 64-bit processing."

The Snapdragon 410 is manufactured using a 28nm process and features an Adreno 306 GPU. Qualcomm said the chipset can handle up to 1080p video playback and a 13Mp camera, plus Wi-Fi, Bluetooth, NFC, FM, GPS, Glonass and China's new BeiDou.

The chip also supports major operating systems, including Android, Windows Phone and Firefox OS.

Qualcomm said the Snapdragon 410 will be available for sampling in the first half of 2014 and will appear in devices commercially in the second half of the year.

Intel

Intel has completed work on a 64-bit version of Android OS for x86 smartphones, and the software will be ready to load on handsets with its upcoming Atom 64-bit chip codenamed Merrifield.

Intel has been making code contributions to the 64-bit version of Android 4.4 'KitKat'. It has completed the kernel work, which will ensure the OS is compatible with smartphones, said an Intel spokeswoman at CES 2014.

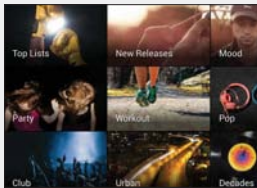
But 64-bit Android could reach tablets first. Intel said 64-bit Android tablets powered by its Atom processor codenamed Bay Trail will become available in the first half of this year. The tablets are expected to sell for as little as \$150 (£91).

The code completion paves the way for device makers to load 64-bit Android and their own user interfaces on devices. A full 64-bit Android is not yet available on smartphones or tablets. Intel also hopes developers will start writing 64-bit applications for Android smartphones running on Atom chips.

Intel is expected to shed further light on 64-bit Android and the Merrifield chip, which is targeted at high-end smartphones, at February's Mobile World Congress tradeshow in Barcelona. Intel didn't talk about smartphones at CES, instead focusing on tablets, hybrids and wearable electronics.

Intel is still trying to find its bearings in the smartphone market, which is dominated by ARM. Intel has adopted Android as the OS of choice for smartphones running on its chips, and getting to 64-bit could give the chipmaker a head start over rivals. Chip makers such as Qualcomm, STMicroelectronics and others have announced ARM-based 64-bit chips, and Samsung is not far behind.

Merrifield will be made using the 22nm manufacturing process. Intel in November updated its roadmap to include new smartphone chips that will start shipping in the second half of this year.



Spotify Mobile free for everyone

Spotify has made its mobile smartphone- and tablet app free for anyone to use - except those running Windows Phone or BlackBerry. Now any smartphone- or tablet user can stream music on the go via Spotify for free. The service was previously restricted to subscribers of the Premium service only, which costs £9.99 per month. The firm has also removed its time limits.

MORE: tinyurl.com/puvevfq



Sky Store offers movie rentals to all

Sky has made available to all UK viewers its Sky Store movie-rental service. Anyone with a broadband connection and a computer can now rent films from the Sky Store, with prices starting at 99p. The Sky Store has more than 1,200 titles on offer, and is also available via Roku, YouView and Now TV Box.

MORE: tinyurl.com/Lbkr27k

YouView expands catch-up service

YouView has added two new catch-up services to its on-demand catalogue. Users can now catch up on the past seven days' worth of programming from Freeview channels Yesterday and Really. Shows available include 'Lost Past', 'Find My Past Ghost Adventures' and 'Got Home Alive'.

MORE: tinyurl.com/Lup9ot2

SKY, VODAFONE PARTNER TO TAKE ON BT BROADBAND

Firms tipped to build high-speed broadband network to rival that of BT



Sky and Vodafone have reportedly held 'high-level' talks with a view to joining up to take on BT in the broadband market.

The pair are said to be considering creating a partnership to compete against BT, which is investing more than £3bn on a high-speed fibre-optic network that is planned to reach 90 percent of UK homes by 2015.

Sky and Vodafone have declined to comment, but *The Sunday Times* cites 'senior sources' when it claims the two firms might be plotting to offer Sky's sports and movie content, plus collaborating on a high-speed broadband service to rival that of BT.

However, sources say that it's unlikely that the pair will spend several billion pounds on building a nationwide network.

Vodafone is currently offering customers free access to Sky Sports Mobile or Spotify Premium. Meanwhile, BT is holding a sale that offers fibre-optic broadband from £7.50 per month.

As well as broadband, BT has been making a splash in the sports market. It launched its own channels with 18 Premier League games, and it has knocked £1.5bn from Sky's share price by winning the rights to show Champions League football.

The firm's two sport channels, along with ESPN, are free to BT Broadband customers who can watch via a web browser, app or YouView TV box.

The firm is going from strength to strength and may even get back into the mobile game later this year. Last year BT dropped Vodafone as its mobile virtual network operator (MVNO) with EE as its replacement.

Sony pushes 4K content and TV sets

2014 is set to be the year of 4K

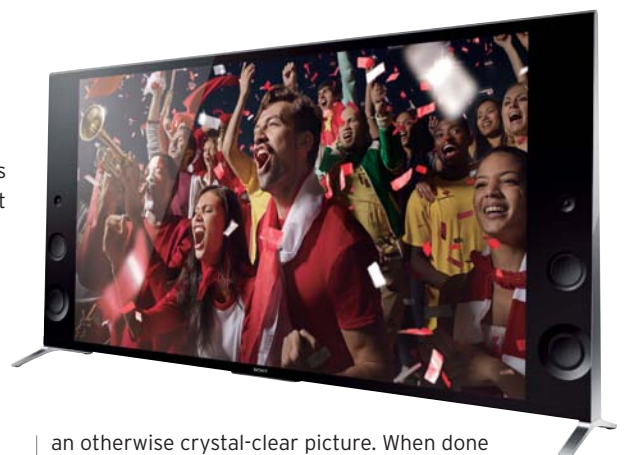
You can have the best 4K TV set in the world, but that high-resolution screen still demands a steady supply of 4K content to work at its best.

Although Sony introduced a further nine 4K TVs at CES 2014, it was more interested in talking about content than hardware. Sony executives devoted the bulk of their 4K talk to a pressing issue for consumers: what can you watch on these TV sets?

"We all know content is king," Sony Electronics president Mike Fasulo told the assembled press at CES 2014. "We've made advances there as well."

To that end, Sony touted its Video Unlimited 4K offering, a download service for 4K programming first announced at last year's CES and launching in September. Sony said it has boosted the number of movies and TV shows available through Video Unlimited 4K to more than 140 titles, with plans to add additional releases such as *American Hustle* and *Captain Phillips*.

Movies and TV shows don't necessarily have to be in a native 4K format for you to watch them on a 4K set, but upscaling lower-resolution content means filling in pixels, which can detract from



an otherwise crystal-clear picture. When done properly, watching a 4K TV can be, as Fasulo describes it, like looking out a window - hence Sony's push for native content.

That push includes lining up partners who can supply 4K content that supplements Sony's own library of programming. Netflix will be in partnership with Sony, recording, editing and streaming its original content in 4K, including the second series of 'House of Cards'. A minimum broadband speed of 15Mbps will be required to enjoy the service. ☒

BUSINESS BROADBAND COMES IN VARIOUS SPEEDS: FAST, FASTER AND FIBRE.

Fibre broadband from BT Business is up to 10x faster than average UK standard broadband. So it's worth spending a few minutes getting up to speed.



1. SUPERFAST IS SUPER-EFFICIENT.

You've got better things to do than sit around waiting for downloads. And so has everyone who works for you. BT Infinity for business is up to 10x faster than average UK standard broadband. Which means a big 200MB file will take less than half a minute to download. Web pages appear faster, and you can upload photographs and even videos in no time at all. So everyone makes better use of their time.



2. A FAST LANE FOR BUSINESSES.

You know how slow it can get when the whole world's online at the same time. Well, with BT Infinity for business, it's no longer a problem. It's consistently fast, even at the busiest times. Think of it as an internet fast lane for businesses.



3. FIBRE BROADBAND SPEEDS UP INNOVATION.

The business that doesn't move forward gets left behind. Research shows that superfast fibre broadband fuels innovation in companies like yours*. People are using high quality video conferencing on their laptops to cut down on travelling to meetings, no fancy equipment required. And free, unlimited access to our network of over 5 million wi-fi hotspots opens the door to blue-sky thinking, wherever you are.



4. TECHNICAL SUPPORT, ROUND THE CLOCK.

Our network is 99.99% reliable, and you'll have a technical expert to speak to 24/7. They can help with technical niggles like setting up email or wi-fi connections. And they're specialists in businesses like yours.



5. THE COST? £35 A MONTH.

It's simple to switch, you can have BT Infinity for business installed for free by our experts, and have it up and running for £35 a month. Time is money, they say. So a quick calculation shows that the faster your internet, the more time and money you can save.

Call today and join the thousands of businesses that choose us each month.

0800 345 7961

bt.com/superfastbusinessbroadband



*Getting up to speed: making superfast broadband a reality, NESTA policy briefing, January 2009. 10 times faster is based on BT Infinity for business Option 2 average customer speed (24 hours) and UK average standard (ADSL) broadband speed from Ofcom broadband report, May 2013. Broadband speed can be affected by a number of things: how far your business is from the fibre cabinet as well as the wiring in your building. Not all lines in an Infinity-enabled area can support the service. BT Infinity for business may require a BT line or similar and a fibre compatible router such as the BT Business Hub provided with Infinity. Terms and conditions apply. The speeds provided by BT Infinity for business are more consistent than standard broadband, giving you prioritised traffic with 16Mb assured throughput at 90% of the internet busy period. You'll need to be in range of a BT Wi-fi hotspot, have a wireless device and register for BT Wi-fi. Our Fair Use Policy and terms and conditions apply. Network reliability as at September 2013. £35 a month is based on BT Infinity for business Option 2 with a 24 month Minimum Period.

SWITCH ON to Windows 8

£399
Inc. VAT & Delivery
£30 OFF

mesh Elite 4130

Affordable Performer.
Great for experiencing Windows 8 and powering through your everyday tasks.

- Intel® Core™ i3 4130 Processor
- Windows® 8.1 or Windows® 7 HP
- MSI H81M-P33 Intel® uATX mainboard
- Integrated Full HD Intel® Graphics
- 8GB DDR3 1600MHz Memory
- 500GB SATA III - 6GB/s 7200rpm HDD
- Plus many additional features, full spec online

PCs built for Power & Performance

£359
Inc. VAT & Delivery
£20 OFF

mesh Matrix A6

Powerful AMD A6 performance PC at outstanding value.

- New AMD A6 X2 6400K Processor
- Windows® 8.1 or Windows® 7 HP
- MSI A55-M-E33 FM2 mainboard
- New AMD Radeon HD 8470D GPU
- 8GB DDR3 1866MHz Memory
- 1TB SATA III - 6GB/s 7200rpm HDD
- Cougar SPIKE Mini Tower Gaming case
- Plus many additional features, full spec online

£499
Inc. VAT & Delivery
£30 OFF

mesh Elite 4570

This 4th Generation Intel PC will rip through tasks effortlessly.

- Intel® Core™ i5 4570 Processor
- Windows® 8.1 or Windows® 7 HP
- MSI B85M-E45 mainboard
- Intel HD4600 Built-in GPU
- 8GB DDR3 1600MHz Memory
- 1TB SATA III - 6GB/s 7200rpm HDD
- Cougar SPIKE Mini Tower Gaming case
- Plus many additional features, full spec online

£729
Inc. VAT & Delivery
£50 OFF

mesh Elite 4770 GTX

One of our New Generation performance PCs with £50 off.

- Intel® Core™ i7 4770 Processor
- Windows® 8.1 or Windows® 7 HP
- MSI Z87-G43 mainboard
- New 2GB AMD Radeon R7 250 OC
- 8GB DDR3 1600MHz Memory
- 1TB SATA III - 6GB/s 7200rpm HDD
- ZALMAN Z3 Plus Midi Tower case
- Plus many additional features, full spec online

£799
Inc. VAT & Delivery
£50 OFF

mesh Silent Prestige

Ultra silent PC utilising the Fractal Define Mini system chassis.

- Intel® Core™ i7 4770 Processor
- Windows® 8.1 or Windows® 7 HP
- MSI B85M-E45 mainboard
- New 2GB AMD Radeon R7 250 OC
- 8GB DDR3 1600MHz Memory
- 1TB SATA III - 6GB/s 7200rpm HDD
- 120GB Solid State Drive (SSD)
- Fractal Design Define Mini Ultra Silent case
- Plus many additional features, full spec online

Silent PC



Supports Intel Smart Response Technology

All Mesh PCs now come with the Windows® 8.1 upgrade

All Mesh desktops come with a 3 Year Gold Warranty

All our PCs come with FREE delivery (UK mainland only)

At Mesh our PCs are Custom Built, Fully Burn-tested with Professional CPU Overclocking options*

Please Read: Sales subject to terms & conditions (copy available on our website). Advert does not form part of a contract. Pictures shown for illustration purposes only - colours may vary. PC 3 Year Warranty - 2 Years parts & labour, 3rd Year labour only - return to base (UK Mainland only). Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and other countries. All trademarks are acknowledged. Sales line open Monday - Friday 9am - 6pm. Online ordering 24x7. Prices and specification correct at time of going to press on 28/1/14. E&OE. *Free Overclock Configuration is available for a unlocked CPU & when a Liquid CPU Cooler is selected.

PREPARE 4 BATTLE



BATTLEFIELD 4

mesh

British built award winning PCs
1987 to 2014



ONLY...

£549

Inc. VAT & Delivery

mesh Matrix A10 - 7850K

An amazingly priced power PC featuring the all-new A10 - AMD's most advanced APU to date.

- New AMD A10 X4 7850K Processor
- Windows® 8.1 or Windows® 7 HP
- MSI A78M-E35 FM2+ mainboard
- New AMD Radeon R7 Series GPU
- 16GB DDR3 2133MHz Memory
- 1TB SATA III - 6GB/s 7200rpm HDD
- Cougar SPIKE Mini Tower Gaming case
- Plus many additional features, full spec online



Time to fire-up Gaming Innovation



£649

Inc. VAT & Delivery

£50 OFF

mesh Matrix FX 8350

Powerful gaming system with new Radeon R7 graphics performance.

- AMD Piledriver FX 8350 Processor
- Windows® 8.1 or Windows® 7 HP
- MSI 990FXA-GD65 ATX Gaming mainboard
- New 2GB AMD Radeon R7 250 OC
- 8GB DDR3 1866MHz Memory
- 2TB SATA III - 6GB/s 7200rpm HDD
- ZALMAN Midi Tower ATX Gaming case
- Plus many additional features, full spec online



£949

Inc. VAT & Delivery

£50 OFF

mesh Elite 4770K Gaming

Reach the next level of gaming with superior GeForce GTX graphics.

- Intel® Core™ i7 4770K Processor
- Windows® 8.1 or Windows® 7 HP
- MSI Z87 - G43 Gaming mainboard
- 2GB nVIDIA GeForce™ GTX 760 GPU
- 8GB DDR3 1600MHz Memory
- 2TB SATA III - 6GB/s 7200rpm HDD
- ZALMAN MS800-Plus Black ATX Midi Tower case
- Plus many additional features, full spec online



£1199

Inc. VAT & Delivery

£100 OFF

Silent PC



mesh Slayer 4820K

Delivering leading performance for your most demanding tasks.

- Intel® Core™ i7 4820K Processor
- Windows® 8.1 or Windows® 7 HP
- MSI X79A-GD45 LGA2011 mainboard
- 2GB nVIDIA GeForce™ GTX 760 GPU
- 16GB DDR3 1866MHz Memory
- 2TB SATA III - 6GB/s 7200rpm HDD
- 120GB Solid State Drive (SSD)
- Fractal Design Define R4 Black Pearl case
- Plus many additional features, full spec online



£1449

Inc. VAT & Delivery

£150 OFF

Silent PC



mesh Elite 4770K Ultima

Core i7 innovation for unparalleled performance.

- Intel® Core™ i7 4770K Processor
- Windows® 8.1 or Windows® 7 HP
- MSI Z87 - G45 Gaming mainboard
- 3GB nVIDIA GeForce™ GTX 780 GPU
- 16GB DDR3 1866MHz Memory
- 3TB SATA III - 6GB/s 7200rpm HDD
- 240GB Solid State Drive (SSD)
- Fractal Design Define R4 Black Pearl case
- Plus many additional features, full spec online

For the latest offers on Mesh's New Generation of PCs, call or go online...

020 8955 0731 | www.meshcomputers.com



The rise of Bitcoin

Martyn Casserly examines how virtual currency Bitcoin is continuing to increase in value and popularity

With traditional currencies struggling to recover from the economic downturn, virtual currency Bitcoin is going from strength to strength. Now investors are saying it's the one to watch if you want to make serious money.

Derided by some as an anonymous form of cash used only by criminals who want to remain untraceable, others champion Bitcoin as a currency that restricts the corruption and profiteering of governments and banks. Whatever your standpoint, this virtual currency has seen dramatic rises and falls in value, multiple hacking scandals, and it's also been linked to various underworld activity, yet it continues to gain popularity.

What is Bitcoin?

The concept behind Bitcoin is somewhat complicated, but in essence it's a cash-like digital currency not owned by any country or bank. The Bitcoins themselves are created when computers generate a correct 64-digit code via special software. The process requires hugely powerful machines to break these codes, and is more commonly achieved through users joining a guild where they share their machines' computational power to 'mine' Bitcoins. These units of currency are then stored in digital wallets either online at sites such as Coinbase.com or locally on your machine. Only a finite amount can be created (21 million) and the production rate is kept at a steady low amount. This creates scarcity and ensures that a sudden flood of coins can't devalue the currency.

Don't try mining Bitcoins on your home PC, though. The amount of time it would take means the cost of electricity would negate any possible profit.

What makes Bitcoin unique is that it has no central bank, and no government that issues or regulates the currency, but it is instead held in place by the vast userbase whose machines validate the creation of coins and transactions that take place. This has been the main area of concern for many, as it allows Bitcoins to be virtually anonymously exchanged. This has made it the currency of choice for many nefarious individuals, including the creators of the ransomware scam Cryptolocker, which hijacks a victim's data and demands payment in Bitcoin for its safe return.

The currency's anonymity and deregulated nature is also one of the main

selling points for many legitimate users. In an age in which governments spy on their citizens to extraordinary levels, and financial institutions are seen as culpable for the current worldwide recession, an increasing number of people find the idea of a free form of monetary exchange appealing. In fact, such is the level of interest in Bitcoin that it's now being suggested by some economists as a way to make some serious money.

"The hottest investment in 2014 will be the virtual currency Bitcoin," states Jamie Dlugosch on the MSN Money investment site. "Take it to the bank. In fact, I wouldn't be surprised if Bitcoin doubles in value or more next year."

This might seem a bullish prediction, especially when you consider that Bitcoin is seeing growing resistance from world powers. The European Banking Authority recently warned investors that Bitcoin presents a substantial risk, while China and Thailand banned all trading of the currency. Cornell University professor Emin Gun Sirer also found in his research that the very nature of Bitcoin was broken and open to abuse from dishonest miners.

Skyrocketing value

This hasn't stopped a meteoric rise in the value of the currency, which started 2013 at around £9 and, by mid-December, had skyrocketed to £440, briefly topping out at £740 in November.

This rapid increase has led some to speculate that the currency will prove to be nothing more than the next internet bubble, akin to the dot-com disasters of the late 90s. Others point to the security issues involved when there is no central governing body, and that Bitcoin users are at the mercy of advanced hacker groups that now see the highly valuable digital money as a lucrative target. All these concerns are valid, but nevertheless Bitcoin is slowly moving out from the shadowy corners of the web and finding its place in the real world.

In Canada the world's first Bitcoin ATM machine was revealed in October 2013, allowing users to make deposits and withdrawals in traditional currencies converted from their Bitcoin accounts. In its first month of operation the transactions processed by the ATM totalled more than one million Canadian dollars. The company responsible for the machine, Robocoin, has

also reported that there is interest for more machines in over 20 countries around the world, including Ireland, Australia, Kenya and the Czech Republic.

Striking it rich

Bitcoin also has its first folklore heroes. Norwegian engineer Kristoffer Koch made a tentative 150 Kroner (£16) investment in Bitcoins in 2009 when the currency was nothing more than a curiosity. He then forgot about the financial experiment and was prompted to look at it again only when he read a report four years later of how the currency had become increasingly popular and valuable. When Koch finally managed to remember his password he discovered that his initial tiny investment was now worth around £429,000. This allowed him to purchase an apartment in Oslo, while retaining a sizable amount of his newfound fortune in his Bitcoin account.

And in the US two newlyweds, Austin and Beccy Craig, made a documentary in which they tried to survive solely on items, including food, that could be bought with Bitcoin. They managed to last an impressive 101 days, and travelled from their home in Utah to Stockholm, Berlin and Singapore throughout the experiment. The challenge wasn't easy, but the fact they coped for nearly three months illustrated how digital money is gaining acceptance offline.

It may still be a long time before we see Bitcoin cash machines on the high street, or our favourite retail stores begin accepting the currency, but its rate of expansion makes these possibilities look more probable than ever before. Many hurdles that the fledgling currency must overcome if it has a hope of entering the mainstream, however.

Governments and law-enforcement agencies see Bitcoin as the perfect vehicle for money laundering, and are resistant to it gaining a foothold. Norway has also said that it regards Bitcoin as an asset rather than currency and will tax it accordingly.

In its initial four years Bitcoin has overcome the first challenge of a monetary system, that of being accepted by people as having an actual value, but in the years ahead it needs to prove whether it can be trusted as a serious alternative to Sterling or the dollar. In an age where technology is ever more entwined with culture, the prospects are more realistic than you might think. ☒



Console or gaming PC: what's best for gamers?



Chris Martin believes that no matter how good are consoles, there's still life in the gaming desktop PC

PC sales are in decline by more than 10 percent year-on-year, and with tablets expected to make up half the market in 2014 the situation is poised to get even worse. Meanwhile, the Xbox One from Microsoft and PlayStation 4 from Sony are the new kids on the block in the world of games consoles. Both have received a warm welcome, selling millions of units in a matter of days. But is there still a reason to buy a gaming desktop PC rather than a dedicated console? We explore the pros and cons.

Performance and cost

As you'd expect from next-generation consoles, the PS4 and Xbox One wield bags of power under their plastic bonnets. They have a similar specification, but the PS4 has the edge - on paper, at least. Both present a big jump in terms of specifications when compared to their predecessors, although it will take games developers some time to fully realise this potential.

While consoles are already powerful, users don't have the option to upgrade their system. Gaming PCs, however, can be built to order, and you decide how much you spend on a rig. A major advantage is the ability to upgrade their individual components, such as the graphics card, hard drive and processor. The down side is that you're likely to spend more outright on a gaming PC than you would a console. You'll need a monitor, mouse, keyboard and some audio gear, and upgrading components isn't particularly cheap.

A gaming PC can be many things aside from a machine on which to shoot through levels, however. Since it is, in essence, an extremely powerful version of a regular PC, you can also do all those daily tasks such as load up Office to get some work done, edit photos and browse the web with a decent desktop browser; the list goes on.

Although consoles have web browsers, they're awkward and clunky. A PC equipped with a web browser lets you access any online service, rather than requiring a specific app to be developed for your chosen platform. On-demand services such as Netflix and BBC's iPlayer are prime examples here,

and they will happily work out-of-the-box on your gaming desktop PC.

Considering what consoles are capable of on the games front, and adding in the handful of non-gaming features they offer such as video streaming, the PS4 and Xbox One offer decent value for money at £349 and £429 respectively. The PS4's price doesn't include the camera accessory, while the Kinect is bundled with the Xbox One, but the former isn't a must-have just yet. Neither console includes the cost of a TV to hook up with, of course.

You don't get much more in the box than the console and a single controller, and will need to find extra funds to splash out on games to play and additional controllers to enjoy multiplayer sessions. Then there is the additional cost of signing up to Sony and Microsoft's respective online services, PlayStation Plus and Xbox Live Gold. You'll have to pay around £30 per year to gain access to such things as online multiplayer mode and certain apps and content. But with a desktop PC you have everything you need.

The cost of games has skyrocketed over the past couple of years to the point that a console title now costs around £50 at launch, whether you buy a physical copy or a digital download. PC games are almost always cheaper, which can help you to recuperate some of the cost attached to owning- and maintaining a decent rig. You can also take advantage of Valve's regular sales on Steam, in which top titles that were released only recently can be snapped up for as little as £5 or £10. On the other hand, if you want to buy cheap console games you'll have to buy them secondhand.

Compatibility

With brand-new hardware inside it's perhaps not surprising that the latest consoles aren't backward-compatible with games and controllers developed for previous-generation systems. Loyal customers might be disappointed after spending great sums on a collection of titles they can no longer enjoy, but with a seven-year gap between console launches it isn't too unreasonable a limitation of the latest models.

Sony fans will be pleased to hear that an online service called PlayStation Now will bring PS3 games not only to the PS4, but PS Vita and Bravia TVs, too. Microsoft is yet to make an announcement in regard to the Xbox One and older games.

This is one area in which the PC has a clear one-up over the consoles; Windows is perfectly happy to run both old and brand-new games. With hardware constantly evolving there's no generation gap and you can upgrade as and when required or funds allow. This does have its complications, of course, such as when drivers and PCs are adverse to change - something avoided by the slot-and-load nature of consoles.

Games

No matter how powerful, slim, beautiful or affordable is a gaming machine, it is nothing without decent games.

If we rewind a number of years, it was the PC that typically had more exclusive games. Some big-name titles, including Grand Theft Auto, Half-Life, Battlefield and Call of Duty, weren't to be found on consoles. Fortunately, developers have now wised up to the idea that if they want to make more money their game must be available on all possible platforms.

Both PCs and consoles still boast exclusive titles, which help them lure in new customers, the situation is very different. Both the PS4 and Xbox One have been criticised over their respective launch line-ups, with only a handful of exclusive titles and not very exciting ones at that.

Killzone, Shadow Fall and Knack are available only on the PS4, while Forza 5 and



Ryse: Son of Rome are exclusive to the Xbox One. The PC, meanwhile, owns the rights to massively multiplayer online role-playing games such as World of Warcraft, Starcraft II and Guild Wars 2.

Whether any of the exclusive titles is a big enough attraction to secure your investment is down to personal taste.

Conclusion

If you're happy to pay a little more for games and the accompanying subscription fees, consoles provide an almost entirely hassle-free experience. The devices themselves are relatively inexpensive, especially considering the decent hardware they offer. Slot in a

game and it just works. Plus, with a decent internet connection, you can access plenty of online content. If we were to split the two, the PS4 is perhaps more dedicated to gaming, while the Xbox One can be viewed as a multimedia hub.

PC gaming is still a great alternative to consoles, with all-round functionality, versatility with far fewer limitations. Users gain the ability to customise their setup and upgrade it over time as new and better accessories and components become available. Games are also cheaper and there tends not to be any hidden costs such as subscriptions, but you'll most likely shell out more on physical equipment. ☒

For our Sony PlayStation 4 review see page 44; for our gaming desktop PC round-up see page 64.

STEAM MACHINES

The Steam Machine is a new genre of gaming device that will launch later in the second half of this year. Something of a cross between a PC and games console, Steam Machines are custom-made to run on Valve's SteamOS. It's the firm's way of bringing the Steam platform into the living room.

The hardware itself will come in many shapes and sizes, with varying specifications and suited to a wide range of budgets. Valve is launching Steam Machines with 13 manufacturing partners, including Scan, Alienware, CyberPower, Gigabyte and Digital Storm.

Some of these devices will be expensive powerhouses that can rival the best gaming PCs, while client boxes will use an existing PC's computing power and stream it to your TV. All will be compatible with Valve's Steam Controller.

Many details are yet to be announced, but Steam Machines are expected to bring PC gaming to the living room, giving gamers access to the latest titles at hopefully cheaper prices than dedicated consoles. Future updates are expected to introduce extra features, such as in-home and online streaming of music and video, plus family sharing.

Award Winning Gaming PCs

Gaming PCs from as little as £269!

Playing the latest highly detailed games without lagging can tax any PC. CCL specialise in providing custom gaming PCs, tailored to run the latest hit games such as Minecraft, The Sims, Call of Duty and Battlefield the way the developers intended. Why not challenge CCL to build your new gaming PC?



CCL Elite **Hawk IV** Gaming PC

Forth generation of our most popular gaming PC
Up to 15% faster than before!



AMD FX-4350 4.2GHz CPU
8GB DDR3 Memory
1000GB Hard Drive
AMD Radeon HD 7770 2GB
DVD Drive, WiFi
3 Years Warranty

£419.99
inc VAT

CCL Code - CCL-EL-HWK4

CCL Elite **Raven III** Gaming PC

Packing a serious punch we believe the Raven III offers gamers the best experience without breaking the bank!



Intel Core i5-4670 3.4GHz CPU
8GB DDR3 Memory
1000GB Hard Drive
AMD Radeon HD 7870 2GB
DVD Drive, WiFi
3 Years Warranty

£559.99
inc VAT

CCL Code - CCL-EL-RAV3

call: **08000 50 10 10**

visit: www.cclonline.com email: pcsales@cclonline.com

find us: CCL Computers Ltd, Inmoor Road
Off Cross Lane, Bradford, BD11 2PS

Prices correct at time of going to publishing
(30th January 2014). Images & case designs
are for illustrative purposes only call for details.
Monitors and desktop bundles are available separately.



www.cclonline.com

Google to standardise in-car tech

Jim Martin sees Google stake a claim to rival Apple iOS in the Car



Car tech has traditionally been largely proprietary, with various manufacturers doing their own thing with safety features and infotainment. But at CES 2014 Google announced the Open Automotive Alliance (OAA), with the aim to bring Android to cars by the end of the year.

Audi, Honda, Hyundai, GM and nVidia are all OAA partners hoping to offer a system that offers openness and customisation.

"Putting Android in the car will bring drivers apps and services they already know and love, while enabling automakers to more easily deliver cutting-edge technology to their customers. And it will create new opportunities for developers to extend the variety and depth of the Android app ecosystem," said Patrick Brady, director of Android engineering.

Kia and Renault already use Android-based infotainment systems, while Parrot's Asteroid Smart is in essence an Android tablet that can be installed in any car that has room for a double-DIN head unit.

The benefit of a standardised approach is that developers can produce apps for a single platform, rather than tailoring them to Renault, Parrot or any other locked-down system that has its own app store.

Other tech companies, including Apple and Microsoft, are also working to bridge the

gap between cars and mobile devices. Apple CEO Tim Cook has called such an integration very important, naming it a key focus.

At its most recent World Wide Developer Conference Apple introduced iOS in the Car, an interface for cars that allows owners of the iPhone 5 or later to make calls, access music, get directions and send- and receive messages using the car's display and controls. Around 20 car manufacturers have shown interest in the system.

There's also the Siri 'Eyes Free' feature, which several companies including Honda are beginning to include in some vehicles. It's similar to iOS in the Car, but allows drivers to perform tasks by speaking commands rather than tapping on a screen.

Microsoft is working with Fiat to develop Blue&Me, which is yet another system for pairing a Bluetooth device and allowing drivers to make calls, listen to text messages and play music without taking their hands off the steering wheel. Microsoft also has its hand in Ford's Sync project, which offers similar features.

The OAA is developing new Android platform features that will enable cars to become connected Android devices. It's a step in the right direction, but it needs more manufacturers to sign up for it to truly become a standard.

What consumers want

Recent IDC research has shown that 75 percent of respondents would prefer to use their current mobile devices to access in-car services. In fact, they wouldn't leave behind their smartphones even if they could. Less than 19 percent of respondents would rather services come directly from the vehicle, without mobile device integration. Both BMW and Renault offer such systems, with a built-in SIM for direct internet access.

"According to our study, most consumers find it vital to access the phone in the vehicle, but also want to maintain their 'digital identity' by connecting their current device to the vehicle," said Sheila Brennan, program manager for IDC Manufacturing Insights' Connected Vehicle Strategies.

"Therefore, automakers that have a strategy that allows consumers to access their own device's service, as well as any unique embedded services that come with the vehicle, will gain an advantage in the connected vehicle market," she added.

So, 2014 is shaping up to be the year in which Google, Apple and Microsoft compete for the driver's seat in car tech. Only time will tell whether infotainment and safety systems will merely become an extension of your smartphone or fully fledged systems in their own right. ☒



Should cars have mobile apps?

Jim Martin isn't sure that a distracting screen will do much to promote driving safety

Infotainment systems in cars are becoming a battleground on which manufacturers try to persuade you their car has better tech than its rivals, and is therefore a better car. But should the car provide the internet connection and apps?

Until now most in-car tech has been concerned with safety, but over the past few years 'infotainment' systems have crept into certain models. Being more than simply a Bluetooth connection to the radio, these proprietary, closed systems have begun to merge the traditional satnav/radio/cd player and trip computer with apps and app stores.

Some rely on your smartphone's data connection, while others have a built-in SIM to connect directly to the internet. There are all sorts of apps, from email and web browsers to those that provide music streaming or internet radio (including Spotify, Deezer and LiveRadio).

Others provide driving aids, such as Waze for crowd-sourced traffic information, Coyote for up-to-the minute traffic and incident information, and parking apps that help you to find nearby car parks.

Infotainment apps

It's easy to see the advantage of such systems. With good voice recognition, you can launch apps and get the information you want without taking your hands off the wheel. There's still a way to go with voice recognition, however.

Either it relies on a data connection, as does Apple's Siri, improving recognition thanks to the enormous power of a load of servers, or your commands are interpreted by the infotainment system itself. The latter approach will work even if you're out of 3G range, but requires you to say specific commands and has more limited scope.

Ford, BMW, Mini, Renault and other infotainment systems each have their own app stores, for which developers have to produce separate versions of their apps. Unlike the Google Play Store or Apple App Store, which each have millions of users, there are merely thousands of owners of car infotainment systems. Developers are unlikely to spend time and effort producing apps which might not net them a profit, and this is why many infotainment systems have only a handful of available apps.

Another issue with proprietary, closed systems is longevity. In a couple of years, manufacturers might have moved on to something new, meaning your outmoded system gets no more updates and no new apps. Cars have a much longer lifecycle than a tablet or smartphone: even though a six-year-old car has plenty of life left in it, its infotainment system may not.

Google's OAA (see page 18) and Apple's iOS in the Car make sense. If manufacturers adopt a 'standard' infotainment platform, there's a better chance of it lasting longer and offering a wider selection of apps.


iOS in the Car

Arguably, though, it would be better if the infotainment system was little more than a larger screen for your smartphone. Most, if not all, the apps on offer in a car's app store are also available on your smartphone, and these simply need to be mirrored on to the car's display.

Is it necessary to duplicate your email, contacts and satnav app on the car's infotainment system? There's also hardware duplication with GPS receivers and 3G SIMs.

Cars with infotainment systems are more likely to be purchased by smartphone-owning tech enthusiasts, but not everyone has a smartphone. It isn't feasible to make a completely 'dumb' in-car screen.

However, a system that can mirror your smartphone won't be so quickly outmoded. Plenty of manufacturers, including BMW, Ford, Renault and Chrysler have already launched apps that you can install on your iPhone to remotely control your car. They let you do a variety of things, from checking an electric vehicle's charge level to pre-warming or cooling it, or even locating it in a car park by flashing its lights or beeping its horn. Using your phone's other functions and apps could be simply an extension of this.

Whether Google or Apple will succeed in the world of automotive apps remains to be seen, but the next couple of years will be very interesting indeed for both car- and tech enthusiasts. 

10 cool, weird & stupid things

Matt Egan describes 10 interesting trends and products at this year's CES tradeshow in Las Vegas

I quite fancied heading over to Vegas to cover this year's CES. I fancied it, that is, until my wallet and my liver sat me down and reminded me of the last couple of times I went.

Instead, *PC Advisor* sent a crack team of tech-hungry journalists to cover the world's most important consumer technology tradeshow. Turn to page 28 to see the best products David Court and Chris Martin saw at CES 2014, including new tablets, TVs and smartwatches. Here we list 10 trends and products from CES that were also of interest.



E-GO CRUISER

1. Android PCs, Windows/Android tablets... anything goes

This is the year that Android has grown up to be a proper OS, and Windows is finally being taken seriously as a portable platform. Set aside your preconception about what is a PC and what is a tablet or a smartphone, computers are everywhere and whether it is Android desktop computers or dual-boot Windows and Android devices, the old barriers have broken down and the right platform is the one that is to hand.

2. If you're doing it, you're wearing it

It was no mistake that Intel kicked off CES 2014 with a parade of wearable computing devices. Smartphones have liberated us from the desktop, but taken us back to a time of using pocket watches. Smartwatches, -glasses and headsets are going to put connectivity where it is most convenient. And in 2014 you'll be wearing your most important tech.

SENSE MOTHER



Either that or now that all high-end consumers have as many connected devices as they can handle, the tech industry wants to flog us more devices. We'll see.

3. The new digital fork is a crock pot

Last year everyone got excited about a fork that helped you to lose weight. This year it was a pot for making stew. Go figure.

4. Parenting is a job for dolls

And if your cooking utensils can be connected, anything can be used for anything, right? The theory of the 'Internet of Things' has been around for a long time (see page 24). The idea is that everything will become connected - not just dedicated computational devices. And that way the internet and connectivity becomes an almost tangible part of our lives. Thus it is that a doll - the Sense Mother - can drop cookies on objects and, yes, babies, tracking their movements and nagging you when required. This is the future, people, and if you didn't ask for it you certainly didn't stop it.

from CES 2014

5. Gaming got physical

Remember when the Wii's controller seemed amazing because it sensed your movements? A lifetime ago. At CES 2014 we saw the Oculus Rift HD virtual reality headset, Intel's new Kinect rival, Sony's gaming headset and more. Dedicated gamers are going to have to sharpen up because this stuff just got real.

6. Tablets are also set-top boxes

We're creeping ever closer to the connected home in which every surface is a display, and every device plugs in to every other device. Where your music, movies, books and so on live in the cloud, and can be accessed from any connected device. Right on cue, there's a tablet that's also your TV's set-top box.

7. A battery-powered skateboard

Back to the future indeed. With E-Go's Cruiser you can skateboard without putting in effort. If you can, you know, skateboard.

8. Transformers: PCs in disguise

Keep throwing aside those convictions people: Toshiba's concept PC was on show at

CES 2014 and it is in fact five computers in one chassis. Mind-blowing, yes. Cool? We think so.

9. The rise of Steam Machines

There were 13 SteamOS devices on show at CES 2014, all dedicated to changing the way we play games. The first Steam Boxes will launch in the UK in the second half of this year. See page 16 for analysis on how they might change the game for gamers.

10. The Michael Bay meltdown

All of tech loves a celebrity endorsement, and if it isn't Lady Gaga designing Polaroid kit, or Kevin Bacon trying to remember what he did with EE's money, it's Will.I.Am putting his name to just about everything. This year: serial director of appalling films Michael Bay had a moment when his autocue broke. A priceless and pointless exercise for all concerned. Like his *Transformers* movies.

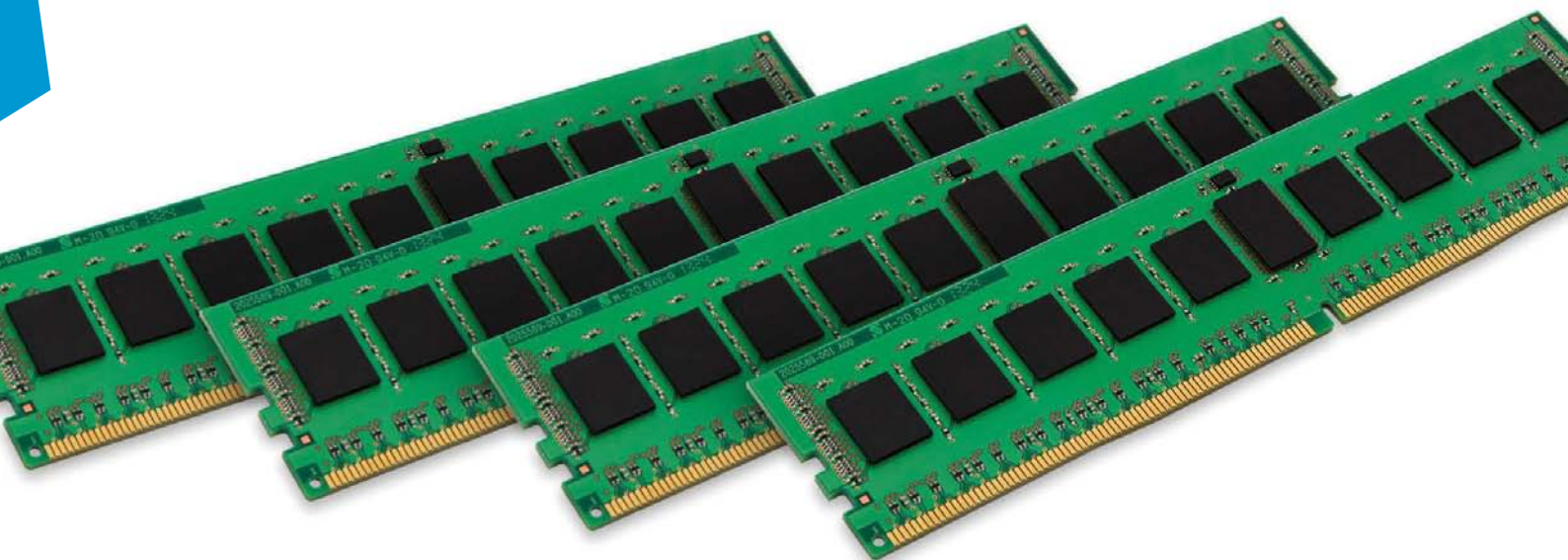
You can read all our CES 2014 news coverage on our website at pcadvisor.co.uk/articles/ces. ☒



ASUS TRANSFORMER BOOK DUET TD300



WEMO CROCK POT



Intel set to bring DDR4 DRAM to computers

Intel is bringing support for DDR4 memory to its server chips code-named Grantley, which are based on the Haswell architecture. Agam Shah reports

Intel will add support for DDR4 memory to its high-end computers in the third quarter, sources familiar with the company's plans have said.

The DDR4 memory, which has been under development for more than five years, will speed up computer performance while reducing power consumption. It will also mean a progressive slowdown in the adoption of DDR3 memory, which currently goes into most laptops, tablets and servers.

The adoption of DDR4 by chip makers at the motherboard- and chip level is the first step to bringing the memory type to computers. DDR4 chip support will come with Intel's next-generation Xeon server processors code-named Grantley, which will be based on the Haswell architecture, to be released in the third quarter.

DDR4 could then make its way to laptops and PCs in 12- to 18 months. Lenovo has said it will launch new types of servers based on the Grantley chips in the third quarter.

DDR DRAM is the main volatile memory used in PCs, servers and mobile devices today. It does not retain information once a device is turned off.

Modules of DDR4 memory on gaming boards with Intel's chips were demonstrated at the Intel Developer Forum in September. Intel's high-end desktop processors for gaming are also expected to support DDR4.

An Intel spokesman said the company is working "with the industry" to bring support for DDR4 to its high-end systems, but did not provide a date.

Laptops will be faster and get longer battery life with DDR4 memory, although the current DDR3 DRAM is considered sufficient in most cases. DDR4 provides 50 percent more bandwidth than DDR3, and 35 percent more power savings.

DDR4 memory could prompt Apple to again upgrade its Mac Pro, which just began shipping with the Intel's latest Xeon processors based on the Ivy Bridge microarchitecture, which supports DDR3. System builders have already been testing boards with DDR4 memory.

Mobile devices won't get DDR4 memory anytime soon, since tablets and smartphones are just getting equipped to using low-power DDR3 (LP-DDR3) DRAM. JEDEC is still developing the mobile DDR4 specification, and Samsung has recently announced an LP-DDR4 module for mobile devices.

Early adopters will pay a hefty premium for DDR4, but the prices will fall as adoption grows. Analysts expect a 30 percent price premium on DDR4 memory over DDR3, which could drop to 10 percent in 2015.

Some of the first applications for DDR4 will likely be in high-end database and enterprise resource-planning programs,

which are increasingly utilising in-memory processing. DDR4 will also be beneficial for complex calculations in supercomputers.

"It will get used only in places where the performance is needed," said Dean McCarron, principal analyst at Mercury Research. "It won't be in low-end web servers."

The adoption of DDR4 was delayed as DDR3 DRAM prices stabilised last year. Higher margins prompted memory makers such as SK Hynix and Samsung to continue making DDR3 rather than move production capacity to DDR4, which would have been more expensive to make. Memory makers also delayed DDR4 after demand for PCs fell. In addition, Intel and AMD delayed DDR4 adoption after the emergence of Ultrabooks, which use low-power DDR3 memory.

Companies such as Samsung, Micron and Kingston demonstrated DDR4 memory after the DRAM specification was finalised in September 2012. Samsung has already started manufacturing the memory for commercial use, and Crucial (owned by Micron) demonstrated DDR4 at CES 2014.

The DDR4 bus clock speed will top out at 3200MHz, an improvement from 2400MHz for DDR3, and 1.2 volts will be supplied for DDR4 compared to 1.5 volts for DDR3. DDR4 reliability is considered higher because of more debugging and diagnostic tools to prevent data errors. ☒

Versatile and Powerful NAS



DS1513+



DS1813+



Superior Performance

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

Advanced Business Applications

Complete integration with Windows® ADS and LDAP environments. Backups via iSCSI LUN helps make the best use of the storage space and offers the highest performance during backups.

High Reliability

Passive cooling for processor to prevent from fan failure. Redundant system fans provide continuous availability. Other fail-proof designs include multiple LAN ports and hot-swappable hard drives.

Join us on Social Media



Distributed by



Synology apps available on



Accolades for Synology



DS1813+ award



DS1513+ award



What is the Internet of Things?

Wonder what people are talking about when they reference the 'Internet of Things'? Matt Egan explains the Internet of Things, and why we are currently living in the Internet of Stuff

Tech loves jargon. Whenever there's a legitimate development in the world of consumer- or business technology, you can guarantee that there'll be a buzzword or -phrase close behind. Here's an example: 'Cloud computing' is a game changer for enterprise- and personal-tech, but that hasn't stopped every man and his dog appending the word 'cloud' to any site or service that even tangentially relates to the matter in hand. A website is not necessarily 'cloud computing', but you'd be forgiven for thinking otherwise. And so it is with the Internet of Things.

At the recent CES 2014 tradeshow, analysts and vendors fell over themselves to describe every gadget and gizmo as pertaining to the Internet of Things. The Internet of Things is likely to take great steps toward maturation in 2014, but that doesn't make all the hacks at CES knew what they were talking about. Here we explain what is the Internet of Things, and then how it relates to your life, and the devices you use and will use.

What is the Internet of Things?

The Internet of Things speaks to the idea that in a world of big data anything - objects, people, even animals - can be quantified, measured and connected. In the theory

objects and living creatures will be tagged with unique identifiers such as RFID to become part of a network. The Internet of Things is made up of people and physical objects. It's a three-dimensional version of the world-wide web, itself made up of bits of data.

If that all sounds a bit far-fetched, look at the number of ways in which objects, animals or people are currently provided with unique identifiers. Look at how we automatically transfer the data generated by those people and objects over a network. Every item in your local supermarket is tagged with an RFID chip - it doesn't require human-to-human or human-to-computer interaction in order that the stock controller can know where everything is at any one time. The same is true of cows on a dairy farm.

And although you may not personally have a chip embedded in your brain, if you carry a smartphone or a connected activity tracker you are creating and uploading to the web a trail of data about where you've been, what you have done, and even what you like. If you shop for groceries online you

are also uploading information about how much of what you consume each week. The theory of the Internet of Things is that if you had a connected fridge and cupboards, you could take delivery of just the right amount of food and drink each day without having to request it. Your bank account would get a little emptier each day, but your fridge would stay full. All you'd have to do is remember to chuck out the old milk. For now, at least.

The concept behind the Internet of Things evolved from the convergence of wireless technologies, micro-electromechanical systems and the internet. And it may sound futuristic, but most of the pieces are in place. We're just waiting for the practical applications to converge.

The Internet of Things now

The Internet of Things exists... kind of. But it will take some commercial convergence and a push from users to make it properly



LG LIFE BAND TOUCH



come together. As ever, things will look very different in 18 months.

Consider wearable tech. All those smartwatches and activity trackers are nice gadgets, but they also form an important brick in the building of the Internet of Things. When you use an activity tracker you are quantifying your physical life: your movements and aerobic activity, how much you sleep and so on. Use a social device such as a Fitbit and you are sharing that information with the wider web. You are a physical part of the Internet of Things.

Google Glass is another way of tagging you and garnering your personal data. But it also shows the reverse effect: walk around with Google Glass enabled and you can see that data already attached to physical buildings and landmarks. Plenty of things are already part of the Internet of Things.

When you add in the fact that all your web-searches and -surfing are being recorded for marketing purposes, that you have an online bank account, a Facebook account and all the other life data that you upload, you can see that it is possible to create a very detailed picture of you as an object that is part of the Internet of Things.

If you consider then all the connected forks, crock pots and internet fridges we've seen at CES over the years, and you can see how it could come together. The internet already knows what you like and how much money you have, throw in the contents of your fridge and how much exercise you did today and what you ate, and it isn't too much to ask for your connected cooker and cupboards to have a meal ready for you to make when you get home - with the oven on. Which brings us to the connected-home idea: a key component of the Internet of Things.

Connected home

Google recently bought Nest - principally famous for building a connected thermostat and smoke alarm. And Google doesn't spend billions of dollars unless it senses an opportunity. The ability to remotely measure,



record and control what goes in your home is here today. It's not cheap, but it will get cheaper. Free even, if Google is a lead player.

We're not too far away from a world in which you use Google not only for everything you do online, but also for the way you interact with physical objects. And if that means I Can't Believe It's Not Butter adverts inside your fridge... well, history tells us that we all happily accept that.

What needs to happen to make the Internet of Things a reality

The tech is mostly in place. And for enterprise the Internet of Things is a reality right now. On the personal tech side what needs to happen now is that consumers buy the goods and sign up for the services. For that they need to be incentivised by a better standard of living. And all the various devices and services need to work together.

A good analogy is the battle for your choice of broadband, smartphone and media supplier. Apple, Google, BT, Sky, Virgin, Microsoft et al all want to provide you with everything from on-demand TV, through cellular and broadband connectivity, to music downloads. Right now, however, I expect that you use at least two of the companies in that list for those services. You may be able to start watching a film on your iPhone and finish watching it on the Apple TV, but that doesn't really help if you have a Sky Plus box in the front room.

That particular fight will work itself out over the next couple of years. It will mean good deals for consumers in the short term, some sort of standardisation of platform, and some mergers and pain for some of the big players over the medium term. The Internet of Things may take a while to work itself out.

All the individual players need to work out commercially viable ways of making this


stuff work together. And they need to do so in a way that is attractive to consumers. Getting us all to carry smartphones, log into Google accounts and wear smartwatches and -glasses is a start. But buying connected-home automation kits and internet fridges is a way off, and will be a harder sell unless the benefits are clear. Overall, the practical applications of the Internet of Things will become meaningful to consumers only when it all comes together.

Why CES 2014 was the show of the Internet of Stuff

Which is why I would say that a lot of things we saw at CES 2014 don't yet relate to the Internet of Things. Rather, we are living in the era of the Internet of Stuff. A quick inventory shows that I am typing on a desktop PC, with two smartphones, a tablet and an activity tracker about my person. I am an extreme example because I am a technology journalist, but even those multiple devices don't work together in the way that the Internet of Things demands.

Meanwhile, at home I have neither a smart cooker, connected fridge nor a -thermostat. My car remains resolutely free of apps (see page 19 for our opinion on that). Yes, I can access the web pretty much everywhere I go, and my web use means that I am becoming a part of the Internet of Things. But not a fully formed object, and with a life not fully connected.

The truth is I will upgrade all of those appliances and devices only when the current ones clap out. And when the companies glueing together all this stuff make it worth my while to do so.

The Internet of Things is coming, mark my words. In a beta sense it is already here for consumers. But right now what we have is a bunch of stuff. The Internet of Stuff. 

NEW HOS

MAXIMUM FLEXIBILITY AND PERFORMANCE

1&1's high-performance data centres are amongst the safest and most efficient in the world. Our multiple redundant networks with over 300 Gbit/s connectivity ensure the best availability.



MORE EFFICIENCY: CDN PERFORMANCE

An improved CDN (Content Delivery Network) provides maximum availability for your website.

NEW: Now for mobile devices as well! Plus, over this network (distributed over 23 PoPs and various backbones worldwide), the static data, and now also the dynamic website content is stored locally (caching) so requests can be delivered extremely quickly.

MORE SAFETY: SECURITY SCANS

With 1&1 SiteLock, your website, including the content of your pages, is actively protected from malware, unauthorised access and other threats from hackers.

INCLUDED: Daily malware scans and complete website scans every 30 days, allowing you to protect yourself and your website visitors against viruses and trojans.



MORE CONFIDENCE: GEO-REDUNDANCY

1&1 offers the highest security and reliability through a geo-redundant infrastructure: Your data is stored simultaneously in two data centres in Europe. If one fails, the system automatically switches to the second, and your website remains available online. Daily backups of the entire infrastructure also ensure maximum security.



DOMAINS | MAIL | WEB HOSTING | ECOMMERCE | SERVERS

* 1&1 Web Hosting packages with 30 day money back guarantee, no minimum contract term and no setup fee. Special offer price inclusive of 12 month billing cycle, prepaid annually, e.g. 1&1 Basic £2.99/month for 12 months, then regular price of £4.99/month. All prices exclude VAT. Visit www.1and1.co.uk for full offer details, terms and conditions.

TING

FOR YOUR WEB PROJECTS

EVERYTHING FOR PROFESSIONALS

From

£2.99

per month*
Excl. 20% VAT



ALL INCLUSIVE

- Free domain (.com, .net, .org, .co.uk...)
- Unlimited power: Webspace, Monthly Traffic, E-mail Accounts and MySQL Databases
- Linux or Windows® operating system

PERFORMANCE APPS

- Over 140 popular apps (Drupal™, WordPress, Joomla!™, TYPO3, Magento®...)
- 1&1 Expert App Support for all enquiries

POWERFUL TOOLS

- Premium software included: Adobe® Dreamweaver® CS5.5 and NetObjects Fusion® 2013 – 1&1 Edition
- 1&1 Mobile Website Builder
- **NEW:** PHP 5.5, Perl, Python, Ruby

SUCCESSFUL MARKETING

- 1&1 SEO Pro
- 1&1 Search Engine Marketing
- Facebook® and Bing® Credits
- 1&1 Newsletter Tool

STATE-OF-THE-ART TECHNOLOGY

- Maximum availability from geo-redundancy
- Over 300 Gbit/s network connectivity
- Up to 2 GB RAM guaranteed
- **NEW:** 1&1 CDN powered by CloudFlare®
- **NEW:** 1&1 SiteLock security scan included!

Call **0844 335 1211**



1and1.co.uk

International

CES®

TV TECH

LG webOS Smart TV >>

Smart TV

LG bought webOS from HP last year and has since redesigned it for use on its Smart TVs. LG's entire 2014 line-up will run the OS. The interface is both colourful and responsive, with a horizontal layout. Everything is considered an 'app', even the HDMI inputs.

Price TBC

lg.com/uk



<< Philips Android TV

Smart TV

Philips has taken a giant, very clever leap in the Smart TV market: its 2014 upper-tier TVs will run the Android OS. The new interface includes different sections such as online TV and sources. Users can also browse and download apps from the Google Play store. A quad-core CPU also helps to improve the user experience.

Price TBC

philips.co.uk

More New Products online:
tinyurl.com/gadgetspca

CHRIS
MARTIN

MOBILE

Samsung Galaxy Tab Pro << *Tablet*

Samsung has given its Galaxy Tab range Pro status with an impressive 2560x1600 resolution and a similar design to the Galaxy Note 3 (without its S Pen stylus). As always the Tab has a 10.1in screen, plus 8.4- and 12.2in versions are available. Android 4.4 KitKat is modified with Samsung's Magazine UX.

Price TBC
samsung.com/uk

<< **Sony Xperia Z1 Compact**

Smartphone

Finally, you can buy a medium-size smartphone with a top-end spec! The Xperia Z1 Compact has the same 20.7Mp camera, quad-core processor and waterproof design of Sony's flagship Z1, but is of a more manageable size. The Z1 Compact has a 4.3in display with a 720p resolution.

Around £450 inc VAT
sony.co.uk



WEARABLE TECH

LG Lifeband Touch >>

Fitness tracker/smartwatch

LG has jumped on the wearable tech bandwagon with its Lifeband Touch, which looks similar to the Nike FuelBand with its touch OLED display. It's a fitness tracker with a tri-axis accelerometer and altimeter, but can also be paired with a smartphone to receive call- and text message notifications.

Price TBC
lg.com/uk



Sony Core and Smartband <<

Fitness tracker/smartwatch

Working in conjunction with the Lifelog app, the Sony Core and Smartband records your daily activities - whether you're cycling, sleeping or on the train. The device can also give you notifications and control your phone when connected via Bluetooth.

Price TBC
sony.co.uk

>> Razer Nabu

Fitness tracker/smartwatch

The Nabu wristband has two screens: one public; one private. It offers information such as calories burned and distance travelled.

\$99 (£60) • razerzone.com/gb-en



Pebble Steel <<

Smartwatch

Pebble has given its smartwatch a new premium design. It comes in either 'black matte' or 'brushed stainless steel', and has a tri-colour display and Gorilla Glass front. A leather strap is provided within the box. It's compatible with all Pebble apps.

\$249 (£150)
getpebble.com



Fast ► Resilient ► Exhilarating

Business Internet from £29 per month

Fibre Ethernet

- Fibre Ethernet Leased Lines
- 10Mb to 1Gb
- Auto failover (optional)
- From £300 per month
- Free connection*

EPMC

- Copper Ethernet GEA/EFM Leased Lines
- 2Mb to 35Mb
- Auto failover (optional)
- From £125 per month
- Free connection*

DualStream®SF

- SDSLM and VDSL
- 2Mb voice and up to 76Mb data
- Auto failover
- From £99 per month

VDSL

- Fibre Broadband
- Up to 76Mb
- Auto failover (optional)
- From £29 per month

► Whatever your budget, we have a fast, resilient solution to suit your business needs.

SPITFIRE®
VOICE • INTERNET • DATA



* Terms and Conditions apply. All prices quoted are monthly rentals. All products suitable for converged voice and data.

Specialists in business-class Internet connectivity, SIP and Voice over IP.

Call Spitfire on 0800 319 6010
or visit our website
at www.spitfire.co.uk

For Partner Service details,
call 0800 319 6500



Innovative • Flexible • Reliable • Supportive

Telecommunication Services to Business since 1988

www.spitfire.co.uk



COMPUTING & HOME

>> Toshiba Chromebook

Laptop

This is not only Toshiba's first Chromebook, but the first Chromebook to have a 13.3in screen. The resolution of 1366x768 and plastic build quality is reflected in the reasonable price tag. Toshiba claims the laptop has a nine-hour battery life.

\$279 (£170)

toshiba.co.uk



Archos Smart Home <<

Connected home devices

Archos' relatively affordable Smart Home objects range includes a Mini-Cam, Weather Tag, Motion Ball, Smart Plug and a Movement Tag. These can be connected to the Smart Home Tablet or app to monitor and control everything within your home, from switching on lights to alerting you when you need to de-ice the car.

£150 inc VAT (starter pack); £20-50 inc VAT (individual)
archos.com



Intel Edison ↗

Compact computer

It might look like a memory card, but the Edison is Intel's smallest, lowest-power computer, and it supports multiple OSes. On this tiny piece of kit is a dual-core 400MHz Intel Quark CPU, integrated Wi-Fi and Bluetooth, flash storage, RAM and a micro-controller.

Price TBC
intel.com



Asus Transformer Book Duet <<

Compact computer

The Transformer Book Duet comes with a removable keyboard dock and takes its name from the fact it's a dual-boot device. The Duet runs both Android Jelly Bean and Windows 8, switching between the two at the press of a button.

\$599 (£365) • uk.asus.com ✉



► The perfect converged solution

Business Ethernet and Spitfire SIP Trunks

Benefits of Spitfire:

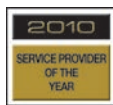
- Ideal for use on Spitfire Ethernet circuits - guaranteed quality from one provider
- Spitfire bandwidth, numbering and SIP Trunks in one complete package
- UK based support

Benefits of SIP Trunks:

- Save up to 50% on ISDN30e rental and 75% on connection charges*
- Ideal Disaster Recovery solution
- Porting of existing BT numbers as well as our own UK wide number ranges

► **SIP Trunks at £4 each and Ethernet circuits from £150 - an unbeatable combination!**

SPITFIRE®
VOICE • INTERNET • DATA



* Cost comparison: One year BT Retail contract: 10 ISDN30e channels + 100 DDI quota + CLIP = £218.00 per month. Spitfire: 10 SIP Trunks + 100 DDIs + CLIP + 1Mb additional Etherflow bandwidth on existing spitfire Ethernet = £74 per month (Etherflow = Metro Band 2A). Existing 2Mb leased line @ £45 per month compared with Spitfire 2Mb Ethernet leased line from £180.00 per month.

Specialists in business-class Internet connectivity, SIP and Voice over IP.

Call Spitfire on 0800 319 6010
or visit our website
at www.spitfire.co.uk

For Partner Service details,
call 0800 319 6500



Innovative • Flexible • Reliable • Supportive
Telecommunication Services to Business since 1988
www.spitfire.co.uk





Apple Mac Pro **59**



41



42



44

ANDREW
HARRISON

Opinion: Citizen myth

Numbers can speak for themselves. Except when they are mangled, squeezed and manipulated to the publisher's will, as is common in the worlds of politics and PC technology.

But let's talk about IT, where huge businesses have been built by one particular group of doom harbingers and stat shifters: the virus industry. Or as they would style themselves, the 'anti-' virus industry, even if much of the cure can be as bad as the disease.

So when a large corporation looks at the state of the threat landscape and finds that 99 percent of all mobile-targeted malware is focused on one mobile computing platform, I am more likely to believe its stats (even though it's worth noting that, since buying SourceFire last summer, Cisco now has a stronger interest here).

The Cisco 2014 Annual Security Report highlights several home truths, such as the risk from having Java installed on your PC. With 91 percent of all computer infections in 2013 based on Java exploits, it's not surprising that CERT advisers recommend disabling all versions of Java in your browser. I'd go further and suggest never installing it in the first place, or totally removing it.

According to Cisco, that 'dangerous' mobile platform is Android, the software of choice for hackers, impoverished would-be smartphone owners, and the bulk of the population pounded by upgrade offers from their mobile provider, and then finds itself landed with a Google phone in the near-absence of feature-phone alternatives.

This seems to be the case in the UK at least, a saturated market in which mobile networks rely on upselling renewal contracts with

a shiny new smartphone as the carrot. Mind, that's not accounting for phone users further down the tech-intelligence quotient, the unwary fobbed with unloved Nokia Lumia handsets, unaware of that platform's burning future.

Going back to those Cisco numbers, the most endemic malware threat for Android last year, at 43.8 percent of all recorded infections, was a Trojan called Andr/Qdplugin-A. It's typically wrapped in games and other apps, and spies on your use of the phone and then sends personal info to remote servers, where it's marketed on for profit.

Two ancillary points spring from this: one is the popularity of this Trojan in Chinese-speaking territories, where Android malware seems most rife; two is the reason most people ignore these threats is the same reason they're using these mobile phones with their broken security model in the first place - ignorance.

Most Android users are as blissfully unaware of malware threats on their chosen phone as they are of the privacy violations that occur with their tacit blessing after they tapped Agree to all the conditions imposed in Google's EULA.

It really shouldn't be surprising that most citizen smartphone users don't appreciate the threat from third-party spyware on their phone and the lifting of personal information, since they blithely ignore the same threat baked into Android by its very maker.

If you'd rather not have to deal with one of these two dangers to your Android phone, turn to page 72 for our group test of the six most effective malware spotters for Google Android. ☒

PC ADVISOR TEST CENTRE

HARDWARE

- 36 HP EliteBook 840 G1
- 37 Acer Aspire V5-i22P
- 38 Dell Precision M4800 Mobile Workstation
- 39 Schenker XMG C703
- 40 Chillblast Photo OC
- 41 Lenovo ThinkPad Yoga
- 42 Toshiba Encore WT8-A102
- 43 Advent Vega Tegra Note 7
- 44 Sony PlayStation 4
- 45 Fitbit Force
- 46 WD My Cloud EX4

- 46 Samsung HW-F551
- 47 Swann DVR-1500 & Pro-510 Camera
- 48 XFX Radeon R9 290X Boost Edition
- 49 BenQ BL2411
- 50 Samsung 840 EVO

APPS

- 52 Cut the Rope 2
- 53 Dumb Ways To Die
- 53 Fotor

SOFTWARE

- 54 Slysoft AnyDVD HD
- 54 Serif WebPlus X7
- 55 InPixio Photo Maximiser
- 56 VMware Fusion 6
- 57 Risk of Rain
- 58 Lego Marvel Super Heroes

BUSINESS

- 59 Apple Mac Pro
- 60 Dell C2665dnf
- 61 Canon Pixma MG5550

Prices

All prices are RRP's 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.

£1,344 inc VAT

Contact

■ hp.com/uk

Read more

■ tinyurl.com/L8hp79t

Specification

2.1GHz Intel i7-4600U;
Windows 7 Professional
(64-bit); 8GB DDR3L RAM;
500GB HD (7200rpm);
14in anti-glare LED with
1920x1080 resolution;
Intel HD 4400/AMD
Radeon HD8750M (1GB);
gigabit ethernet;
802.11b/g/n; Bluetooth
4.0; 1x DisplayPort, 1x
VGA; 4x USB 3.0; SD/SDHC/
SDXC; 720p webcam with
built-in mic; headphone/
mic socket; 50Wh
lithium-ion battery;
339x237x21mm; 1.58kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



ULTRABOOK

HP EliteBook 840 G1

It's hardly surprising that most Ultrabooks tend to have 12- or 13in screens since, as that helps to keep their size and weight as low as possible. For some reason, though, HP seems to have a fondness for larger Ultrabook designs with 14in screens, such as its new EliteBook 840 G1.

Fortunately, this business-oriented laptop is still highly portable. It weighs in at 1.58kg and measures 21mm thick, which makes it one of the lightest and most compact 14in models we've seen recently. We had no trouble carrying it in a backpack to a coffee shop, and it was nice to be able to browse the web on a high-quality 14in screen for a change.

The EliteBook is also very sturdy. According to HP, it complies with US Department of Defence standard MIL-STD 810G, which includes a number of tests for temperature and shock resistance. The screen is protected by a layer of tough Gorilla Glass, while the keyboard is designed to be spill-resistant and to drain liquids away quickly.

If you've specifically chosen a laptop with a 14in screen, then its quality will be crucial, and the EliteBook doesn't disappoint. The 1920x1080-pixel display produces a bright, sharp image and has excellent all-round viewing angles. It also has a matt finish that reduces glare and reflections, so the EliteBook is well suited to business presentations or photo- or video-editing.

Our review unit came with Windows 7 Professional and the screen wasn't touch-sensitive, but you can opt for Windows 8 Pro if you prefer. HP has also indicated that there will be a



touchscreen model available in the coming months as well.

The keyboard may repel liquids, but it's still comfortable to use and includes a pointer-stick along with the four-button trackpad. The stereo speakers sound a little tinny, but they're adequate for presentations or relaxing with some streaming video when you're off-duty.

It's also better connected than many Ultrabooks, with gigabit ethernet available for wired office networks, four USB 3.0 ports, and both VGA and DisplayPort interfaces for connecting it to a larger display. There's no built-in optical drive, but HP sells an external USB optical drive for £56, along with dock replicators and other accessories.

There are a number of additional security features for business users, too. As well as the discrete little fingerprint sensor on the right-hand corner of the keyboard, HP's Security Setup program allows you to encrypt the contents of the hard drive, restrict the ability to copy files on to removable USB drives, and to permanently 'shred' and delete files so that they can't be retrieved.


Performance is something of a mixed bag, though. The EliteBook 840 G1 is currently available in just one configuration, priced at £1,344 for a model with a dual-core Haswell i7-4600U running at 2.1GHz (3.3GHz Turbo) along with 8GB of memory, 500GB hard drive, and both integrated HD 4400 and discrete AMD Radeon HD 8750M for graphics.

That's not a bad specification for the price, but the use of a conventional hard drive affects overall performance. It managed a modest score of 3100 when running the general-purpose PCMark 7 test suite, and also takes 45 seconds to boot into the Windows 7 desktop. HP informed us that it plans to offer an SSD option soon, but no dates or prices were available at the time of writing.

To be fair, once the EliteBook gets going it feels smooth and responsive. The combination of the i7 processor and Radeon graphics also means it's more than capable of handling demanding applications. It's even good for a spot of after-hours gaming as well, managing a comfortable 38fps when running Stalker at full 1920x1080 resolution.

Battery life is good, too, as switching to the Haswell processor's integrated graphics allowed the EliteBook to last for almost six-and-a-half hours (385 minutes) of streaming video on the BBC iPlayer. More casual web browsing or running apps such as Microsoft Office should allow you to get a full day's work out of the EliteBook.

Verdict

It's a shame the EliteBook doesn't include a solid-state drive, but this is still a well-designed and versatile laptop. The high-quality display is suitable for presentations, while its sturdy design, security features and battery life will appeal to anyone who spends a lot of time out on the road.  **Cliff Joseph**



£330 inc VAT**Contact**■ acer.co.uk**Read more**■ tinyurl.com/nkd2taj**Specification**

1GHz AMD A6-1450;
Windows 8 (64-bit); 4GB
DDR3 RAM; 500GB HD
(5400rpm); 11.6in touch-
sensitive (1366x768) LED;
AMD Radeon HD8250
(integrated); 802.11b/g/n;
1x USB 3.0, 1x USB 2.0; SD/
SDHC; 720p webcam with
built-in mic; headphone
socket; 2640mAh
lithium-ion battery;
289x206x20mm; 1.38kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆

**LAPTOP****Acer Aspire V5-122P**

The Aspire V5-122P is an odd device, perched rather precariously between an old-fashioned netbook and a flashy new Ultrabook. However, while it provides some attractive features for a laptop that costs less than £350, its appeal is marred by poor battery life.

Acer lists the V5 series on the 'ultra-thin' section of its website, clearly suggesting it's an Ultrabook. The basic design is certainly light and attractive, with this particular V5-122P model providing an 11.6in screen that folds flat to a total thickness of 20mm.

It weighs 1.38kg, so you can easily pick it up with one hand and you'll have no trouble slipping it into a backpack or shoulder bag when you're ready to go out and about.

The Aspire is also well built for such an inexpensive device. The keyboard is firm and comfortable to use, and the plastic case certainly doesn't feel as flimsy as most laptops in this price range. Our one complaint is that the small trackpad isn't responsive, and we often had to tap it a couple of times in order to prompt a response.

The screen is above average for a cheap laptop - especially as it's touch-sensitive, which is a rarity for any laptop costing less than £500. The resolution may be just 1366x768 pixels, which looks coarse on a 15in display, but that's an acceptable compromise at this price and size. And while the screen isn't incredibly bright, its viewing angles are good, making it a good choice for web browsing and watching streaming video.

The speakers produce good sound, but they're not very loud, so you'll need headphones or external speakers for decent volume.



Other aspects of the Aspire V5-122P also seem more like a low-cost netbook than an Ultrabook.

Performance is modest, as the V5-122P is equipped with an AMD A6-1450 CPU running at just 1GHz. This quad-core AMD mobile chip can turbo up to 1.4GHz. With its integrated Radeon HD 8250 GPU, they together form an AMD APU.

Our review unit included 4GB of memory and a 500GB hard drive for a total price of £330. Acer also has a 6GB model, which is available for around £350.

That combination produced a score of just 1300 points with the PCMark 7 benchmark although, to be fair, that score would have been dragged down by the budget 5400rpm hard drive.

During our tests, the touchscreen controls responded smoothly and quickly - faster than the trackpad, in fact - and the V5-122P proved perfectly adequate for web browsing and running Microsoft Word or Excel.

You can probably draw the line at gaming, though. The integrated AMD Radeon HD 8250 graphics could manage just 14fps when running

our Stalker test at

1280x

720, so

gaming

action

will be

limited to

casual games

such as Angry Birds.

Connectivity is

limited, too. The V5-122P

includes just

one USB 2.0 and

one USB 3.0 port, with no

ethernet or HDMI interfaces for


wired networks or larger monitors.

There is an odd 'Acer Convertor Port', which looks and sounds rather like a Mini DisplayPort connector, but there are no cables or adaptors provided for this, so you'll have to buy those separately. There's no Bluetooth included either, which might be a problem if you want to use wireless peripherals.

Those are relatively minor omissions, though, and could be forgiven if they help to keep the price so low. However, the Aspire V5-122P's disappointing battery life is a more serious weakness.

Acer is honest enough to state that the maximum battery life is just three-and-a-half hours - though, we got 215 minutes of streaming video from the BBC iPlayer, so you might even reach the four-hour mark if you weren't using the laptop continuously. Even so, that's poor for a modern laptop - especially a lightweight model such as this, which is clearly designed to spend much of its time on the move.

Verdict

If you're on a tight budget, then the V5-122P may prove good value for money. Its computing speed is low, but the build quality and screen are definitely above average for a bottom-dollar laptop. Unfortunately, the battery life is a real weakness, and may be a deal-breaker for many people.  **Cliff Joseph**



£3,341 inc VAT

Contact

■ hp.com/uk

Read more

■ tinyurl.com/o74nosu

Specification

2.8GHz Intel Core i7-4900MQ (8 MB cache); 15.6in (3200x1800) anti-glare IGZO LCD; Windows 7 Professional 64-bit; nVidia Quadro K2100M with 2GB GDDR5; 16GB (2x 8GB) 1600MHz DDR3L RAM; 256GB SATA 6Gb/s SSD; 8x DVD ± RW; 802.11a/g/n; Bluetooth; 4x USB 3.0, 1x USB 2.0/eSATA; ExpressCard; 9-in-1 card reader; 97Wh lithium battery; 376x256x36.3-39.9mm; 3.28kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆



LAPTOP

Dell Precision M4800 Mobile Workstation

The screen is the first clue to the target market of the Dell Precision M4800 – its 15.6in panel is labelled Quad HD+, which has a resolution of 3200x1800 pixels. That level of detail should make it attractive for CAD and full-screen editing of better-than-HD video formats.

Video professionals take note, the pixel density of this Sharp IGZO panel trumps that on the original Retina laptop, the otherwise similarly-sped Apple MacBook Pro (tinyurl.com/7ygc3kj) with its 2800x1800-pixel IPS panel.

However, not only is the list price much more expensive than its Mac rival, this is also a far heavier beast; our test model with slot-loading DVD ± RW drive came in at 3.28kg.

The machine is fast, aided by the solid-state drive, 16GB of memory and a Haswell-generation Intel Core i7 processor. Storage options are attractive, too. In addition to the 256GB SSD supplied in our top-spec sample, which sits in an easy-to-eject drive bay, you can add another of the same (if you remove the DVD drive), as well as add an mSATA mini-card option.

The nVidia Quadro K2100M graphics processor with its 2GB of memory easily satisfied the requirements for GPU-accelerated 3D rendering when testing the real-world performance with Adobe's video software.

After Effects CC demands a suitably beefy CUDA-compatible card. Running the program's 3D Camera Tracker is a processor-



intensive task, but the M4800 managed to solve – that is, calculate tracking markers – in a piece of HD footage in about 10 seconds. Rendering out a 23-second composition with effects and motion graphics to a 3.29GB AVI file (1920x1080) took one minute, 41 seconds. Meanwhile, our three-year-old MacBook Pro (2011, 2.2GHz Core i7 with 8GB memory) took four minutes, 34 seconds.

In the PCMark 7 test, the M4800 scored 5879 points, a result that's close to the highest we've seen for a laptop, while Cinebench R15 showed scores of 145cb points (single) and 689 (multi-threaded mode). Most impressively, the OpenGL graphic test here played at 68fps.

The real gripe with such an impressively high-resolution screen is that it doesn't work well with Microsoft Windows. The user interface is tiny, and while you can scale up its size, the fonts within many applications, such as After Effects, remain unreadably small. If you're just looking at images and don't need to read, it's a bonus for something as picture-focused as Adobe SpeedGrade CC, though, and colour correcting HD video has never looked so good.

The backlit keyboard could come in handy when gaming. We ran the M4800 through Batman: Arkham City. Running at the laptop's native resolution of 3200x1800 pixels, it averaged 33fps,


dropping down to 7fps at the 'extreme' setting.

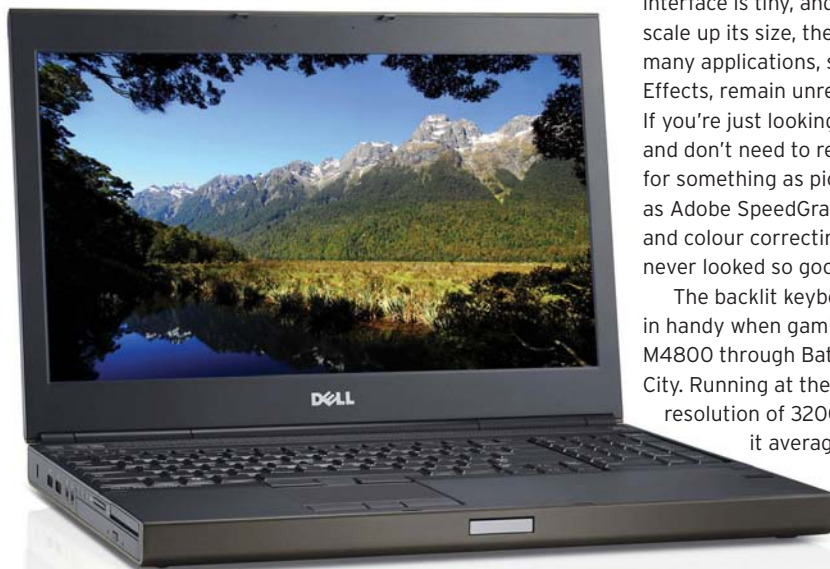
Set for normal at 1280x720, the M4800 averaged 52fps, while at Very High Detail, with all the DirectX 11 bells and whistles enabled, it scored an average 41fps. So if you want to put the Dark Knight through his paces while waiting for some work to come in, you have more than enough power on tap.

The aluminium and magnesium alloy chassis feels substantial. Throughout our tests the dual fans kept the M4800 cool and were quiet, too – the base was warm but not uncomfortable.

Battery life was disappointing, but to be expected given its workstation priorities. Set on Dell's balanced power setting, we found normal operation (web browsing, some video post-production) to stretch to just under three hours. Running a looped video stream from our NAS over Wi-Fi it lasted just two hours, five minutes. Only running idle, with no major application activity, allowed the M4800 to run for five hours, 28 minutes.

Verdict

The spectacular screen on the Dell Precision M4800 will make maximum impact in the high-end video and CAD space. That display comes at a price, though – this less than portable workstation represents a substantial investment. And Windows and many programs will be difficult to use with the screen's resolution. Power concerns may also dictate adding a secondary battery, but this is a fast, workhorse that could deliver real productivity results.  Michael Burns



£1,253 inc VAT**Contact**■ mysn.co.uk**Read more**■ tinyurl.com/lz9zxvb**Specification**

2.4GHz Intel i7-4700HQ (3.4GHz TurboBoost); Windows 8 (64-bit); 8GB DDR3 RAM; 250GB SSD; 17.3in (1920x1080) LED; HD 4600/GeForce GTX765M (2GB); 802.11b/g/n; 4x USB 3.0; SD/SDHC; 2Mp webcam with built-in mic; 1x headphone socket; 1x line out; mic socket; 58.8Wh lithium-ion battery; 418.5x287x22mm; 2.68kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆

**LAPTOP****Schenker XMG C703**

Schenker's XMG range of gaming laptops provides strong performance and good value for money, but they've never been pretty. Of course, most gaming systems are big and heavy, but rivals such as Alienware do at least deck their kit out with flashing lights and other eye-candy intended to hint at the awesome power lurking within. In contrast, most the laptops that we've seen from Schenker in the past have just been rather dull, grey lumps of plastic.

Thankfully, the design fairy has come to sprinkle some magic dust over Schenker's new XMG C703, resulting in what the company claims is "the world's slimmest and lightest 17in gaming laptop". Razer might have something to say about that, but it's still not sent us its slimline Blade laptop to review, so we're happy to give Schenker the benefit of the doubt.

Despite its 17.3in screen, quad-core i7 processor and discrete GeForce graphics card, the C703's smart, matt-black chassis measures just 22mm thick and weighs 2.68kg. That's the sort of weight we'd normally expect from a 15in laptop, so Schenker has made a big step forward there. You can just about pick the C703 up with one hand, and it's light enough to carry around in a backpack without too much trouble.

That slimline design doesn't leave room for an optical drive, though, so if you've got a collection of games or films on DVD or Blu-ray discs, you'll need to provide an external drive in order to use them. The thin screen panel is also a little more flexible than we'd have liked, and could be firmer in order to provide more protection for that large display.

The screen works a treat, though, both for games and watching video. It provides a bright, colourful image, with 1920x1080 resolution and good horizontal viewing angles. It also



has a matt finish that reduces glare and reflections, so you won't miss any action during intense gaming sessions. It's not touch-sensitive, although we doubt many gamers will worry about that.

The keyboard is firm and comfortable to use for long gaming sessions, and there's a decent-sized trackpad as well. There's also a large stereo speaker panel that runs across the top edge of the keyboard. This provides good sound quality and plenty of volume, and is complemented by a separate subwoofer in the base of the machine that adds a respectable bit of bass for listening to music or the soundtrack of your films and games.

If you want to beef up the audio, then there are three separate sockets for headphones, speakers and microphone, along with HDMI and two DisplayPort interfaces for external displays, and gigabit ethernet for a lag-free wired network connection.

Of course, a gaming machine needs to deliver on performance, and while the C703 isn't one of Schenker's top-of-the-range models it still provides a good balance of price and performance. There are numerous build-to-order options on Schenker's website, but our review unit cost £1,253 with a quad-core Haswell i7 running at 2.4GHz (3.4GHz Turbo), 8GB memory, 250GB SSD and nVidia GeForce GTX 765M (2GB VRAM).

Running the general-purpose PCMark 7 benchmark produced a score of 6181. That puts it right up with the fastest laptops we've seen in recent months, so it'll handle everything from simple web


browsing to heavy-duty video-editing.

Gaming performance is strong, too. It breezed through our Stalker test, hitting 96fps even at 1920x1080 resolution with medium graphics settings. To push things a bit further we fired up Batman: Arkham City, and the C703 was able to manage 39fps even at 1920x1080 with DX11 turned on and graphics and anti-aliasing both set to 'high'. Lowering the resolution to 1600x900 bumped the framerate up to about 45fps, which is a level we've previously seen only from gaming laptops costing £1,500 or more.

Despite this level of performance, the C703 ran cool and quiet throughout our tests. There are large cooling vents on both sides, but you can hear the fans only if you put your head close to the keyboard.

The one disappointment is the battery life. Schenker claims the C703 provides up to six-and-a-half hours of battery life for 'general usage', but when we switched to the less power-hungry HD 4600 integrated graphics, we could manage just a little over three-and-a-half hours (215 minutes) of streaming video from BBC iPlayer. Even so, that's still above average for a laptop of this size.

Verdict

A laptop of this size is still likely to spend most of its time indoors, but it's impressive to see a 17in laptop that's light enough to carry around in a backpack. It's not cheap, but it does provide gaming performance that would previously have cost £1,500 or more, and is a great option for any gamer who wants a powerful laptop they can take round to a friend's house for some hard-core gaming.  **Cliff Joseph**



£1,199 inc VAT

Contact

■ chillblast.com

Read more

■ tinyurl.com/mdhtthL

Specification

2.4GHz Intel Core i7-4700MQ (3.4GHz Turbo); Windows 8.1 (64-bit); 16GB DDR3 SDRAM; 1TB hybrid SSHD + 120GB SSD; 15.6in (1920x1080) IPS display; Intel HD 4600 + nVidia GeForce GT 750M (2GB); Blu-ray RE drive; 802.11b/g/n; Bluetooth 4.0; 1x HDMI, 1x VGA; 2x USB 3.0, 1x USB 3.0/eSATA, 1x USB 2.0; SD/SDHC/SDXC/MMC; 720p webcam with built-in mic; headphone socket, microphone socket; 62.16Wh lithium-ion battery; 374x252x31.4mm; 2.4kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆



LAPTOP

Chillblast Photo OC

Chillblast is well-known for its high-end desktop gaming rigs, with a wide variety of customisation options on its website that allow you to more or less design your own PC. However, it also assembles laptops and desktop systems for more 'serious' applications, including its new Photo OC, which is very much focused on photo-editing work.

At first glance, Chillblast's laptop isn't much to look at. It's housed in an unassuming dark-grey chassis that has no outstanding features. The unit is 31.4mm thick, and weighs 2.4kg, so it's no ultraportable. However, that's about average for a 15in laptop with a built-in optical drive such as this, and the Photo OC is just about light enough to carry around in a backpack or briefcase when necessary.

It's solidly built, too, with a firm and comfortable keyboard that includes a full-size numeric keypad and arrow keys - the latter being handy for navigation in design apps such as Photoshop. The trackpad is a good size, too, measuring 107x65mm, and designers will appreciate the SmartPad utility that allows you to fine-tune settings such as the zoom speed or the direction of rotation when using multifinger gestures on the trackpad.

And while the chassis may look rather generic, that's not the case with the screen. With photo-editing in mind, Chillblast has opted for a 15.6in IPS display with a 1920x1080-pixel resolution. The image quality provided by this is excellent - bright, sharp and colourful, and with viewing angles that genuinely approach a full 180 degrees both horizontally and vertically.

Designers will also appreciate the matt-finish that reduces glare and reflections when they're hard at work.

The screen isn't touch-sensitive - but we doubt that any designers will worry about that - making the Photo OC an



excellent choice for photo-editing or video-editing work. It'll also work well for presentations or watching some HD video files through the built-in Blu-ray drive.

It's a shame that the built-in speakers aren't of similar quality. Their feeble volume levels are barely adequate for listening to the news on the BBC iPlayer, so you'll need speakers or headphones if you want to give a presentation or just listen to some music while you work.

We reviewed the standard entry-level configuration for the Photo OC, which costs £1,199 with a Haswell-generation Intel Core i7 processor running at 2.4GHz (3.4GHz Turbo), 16GB of memory, and both a 1TB Seagate hybrid SSD/hard drive and a separate 120GB solid-state drive. Graphics work can be handled by either the Haswell's integrated HD 4600 or a discrete nVidia GeForce GT 750M with 2GB of video memory. And, of course, there are plenty of build-to-order options, with more powerful processors and additional SSD options that can take the total price to well over £2,000. However, the Photo OC did pretty well in bench tests even with this entry-level configuration. It achieved a score of 6075 points when running the general-purpose PCMark 7 benchmark, which puts it among the select group of laptops we've seen that can break past the 6000 mark.

The healthy 16GB of memory will also help it to handle high-resolution photo and video files,

so it's well-equipped to play the role of graphics workstation. The nVidia GeForce graphics can handle CAD and 3D animation, too, as well as some off-duty gaming action, allowing the Photo OC to hit 58fps when running our Stalker: Call of Pripyat test even at native 1920x1080 resolution.

If we were going to nitpick, then we might point out that Apple's 15in MacBook Pro with Retina display (tinyurl.com/l6hauze) has an IPS display that boasts a higher 2880x1800 resolution. However, the MacBook Pro is £500 more expensive, with a more modest processor and less memory.

The Photo OC has another weakness. Chillblast quotes a maximum battery life of five hours, but we managed just over three hours (182 minutes), even when using the more power-efficient HD 4600 graphics to stream video through the BBC iPlayer. That's well below par with many Haswell laptops now reaching eight hours or more.

Verdict

The strong performance and excellent IPS display of the Photo OC ensure that it's well-equipped for its primary role as a photo-editing workstation. The battery life does leave room for improvement, however, it will still be good value for people who simply need a semi-portable graphics workstation that they can carry from one indoor location to another. **Cliff Joseph**



£995 inc VAT**Contact**■ lenovo.com/gb/en**Read more**■ tinyurl.com/l8fg7ho**Specification**

1.6GHz Intel i5-4200U
(2.6GHz TurboBoost);
Windows 8.1 Pro (64-bit);
8GB DDR3 RAM; 500GB HD
(5400rpm) + 16GB SSD;
12.5in touch-sensitive
(1920x1080) IPS display;
HD 4400; 802.11b/g/n;
Bluetooth 4.0; 2x USB 3.0;
1x mini-HDMI; SD/SDHC/
SDXC; 720p webcam with
built-in mic; 1x headphone
socket; 47Wh lithium-
polymer battery;
316.6x221x19.4mm; 1.6kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**LAPTOP****Lenovo ThinkPad Yoga**

Lenovo's Yoga laptops have proved to be among the more popular convertible devices that can function as both a laptop and a tablet, and the company has now added a Yoga model to its ThinkPad range of business notebooks.

At first glance, the ThinkPad Yoga looks like a conventional laptop. It measures just 19.4mm thick and weighs 1.6kg, so it's very much in Ultrabook territory. It's well built, though, with a 12.5in screen that feels firm enough to provide protection, but also flexible enough to absorb the occasional bump when you're on the move.

The solidly built keyboard uses Lenovo's distinctive 'accutype' design, with moulded keys that are comfortable to use for long periods. The trackpad is a little small, but there's also a pointer located on the keyboard so you can use that if you prefer. And, like its 11- and 13in counterparts, the ThinkPad Yoga also allows you to fold the screen right back, so that the laptop stands up on its own - like a tent making an upright 'A' shape. Alternatively, you can also fold it all the way back, so it lies flat over the keyboard and turns the entire unit into a large tablet.

This flexible design will appeal to business users who need to give presentations when they're travelling. The screen is ideally suited for presentations, too, thanks to the use of a bright, colourful IPS panel that provides 1920x1080 resolution and excellent all-round viewing angles. Lenovo also pays good attention to detail, adding an anti-glare matt finish to the screen to ensure



maximum visibility, and includes an application called Transitions that automatically switches programs such as PowerPoint or the Windows Media Player into full-screen mode whenever you fold the Yoga into its tent or tablet modes.

Our one minor complaint here is that the speakers produce a rather thin sound with modest volume levels. They'll be adequate for giving a presentation to someone sitting at a table with you, but you'll need to plug in external speakers for a larger audience, or headphones for listening to music.

The ThinkPad Yoga is a little less expensive than models such as the recently released Yoga 2 Pro (tinyurl.com/p2araxa), but mainly because it uses a conventional 5400rpm hard drive rather than the solid-state storage that's more common in such devices.

A number of configurations are available for the ThinkPad Yoga, with prices starting at £779 for a model with a Haswell i3 processor and 1366x768 display, but we reviewed one of the mid-range models that costs £995 with Windows 8.1 Pro, full HD display, Haswell i5 running at 1.6GHz (2.6GHz Turbo), 8GB memory and 500GB hard disk.

Our review unit also included a 16GB solid-state 'micro-drive'. We've seen a number of laptops with hybrid drives that use small SSD modules to enhance the performance of conventional hard drives but, unfortunately, that didn't seem to be the case here. Running the PCMark 7 benchmark produced a rather disappointing score of just 2064, which much


reflects the sluggish performance of that 5400rpm hard drive. We also noticed that the ThinkPad Yoga could be slow to boot, taking a full 40 seconds to cold-boot into the Windows 8 Start screen, followed by a further 20 seconds of cursor spinning before the laptop was fully ready to get to work.

But, to be fair, after that slow start, it was smooth and responsive, reacting quickly to the touchscreen controls, and feeling more than fast enough to cope with web browsing and running MS Office apps. It can even handle a spot of off-duty gaming action, too. Running our Stalker test at 1920x1080 resolution produced a speed of just 16fps, but lowering the resolution to 1280x720 allowed it to hit a playable 31fps.

Battery life is respectable but not outstanding. We managed to get six-and-a-quarter hours (375 minutes) of streaming video from the BBC iPlayer, so less intensive use should allow you to stretch that to Lenovo's quoted figure of seven hours.

Connectivity is limited, too, consisting of two USB 3.0 ports, mini-HDMI and headphone socket. However, Lenovo does sell a docking station for the ThinkPad Yoga, which costs £96 and provides additional USB ports, as well as DVI and VGA connectors and gigabit ethernet for a wired office network.

Verdict

The ThinkPad Yoga is a well-designed and versatile convertible device, with a high-quality IPS display that will particularly appeal to business travellers who need to give presentations.  **Cliff Joseph**



£250 inc VAT

Contact

■ toshiba.co.uk

Read more

■ tinyurl.com/p5bd3gb

Specification

1.33GHz Intel Atom Z3740;
8in (1280x800) multi-
touch LCD; 2GB LPDDR3
1066MHz RAM; 32GB flash
storage; webcam, built-in
mic; microSD card slot;
Micro-USB 2.0; Micro HDMI;
Bluetooth; 802.11b/g/n;
136x213x11mm; 432g

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



TABLET

Toshiba Encore WT8-A-102

Toshiba is pitching into the emerging small-tablet market with the 7in Encore WT8-A-102. At 432g, the unit doesn't feel heavy, although we'd point out that this is close to the same as Apple's full-size iPad Air (tinyurl.com/pn7jpy8). We'll avoid any more comparisons, though, as they are aimed at entirely different audiences: the iPad is a premium tablet, whereas the Encore is the budget device.

Toshiba has elected to use Windows 8 for Intel. Powering the device is a low-power Intel Atom processor, the latest quad-core version codenamed Bay Trail, which certainly looks impressive on the specs list even if it is just 1.33GHz. Using a very low-power chip like this means the unit can run without an annoying cooling fan, which may be a first for a Windows tablet.

Unfortunately, the chip and operating system combination still feels slow as molasses, much like the netbook experience beleaguered by the same Wintel combination. During testing, the interface was often laggy and we were forced to wait long periods for some simple operations such as file copying to even start. Scrolling was a hit-or-miss affair. Sometimes side scrolling worked; more often it didn't.

The bigger problem is the unsuitability of managing a desktop interface from a tiny touchscreen rendered at 1280x800 pixels on an 8in screen. We tried increasing the scaling in Windows from 150 to 200 percent, but that left us very little room to manoeuvre; and many Windows programs don't work properly with this scaling system.

There's always the touch-bound Metro tiled interface, but the paucity



of useful programs even after two years of Windows 8 means that you'd still only ever buy a Windows PC to run legacy programs.

The Toshiba Encore is well equipped with ports by most tablet standards, even if they're not as useful as the maker would have you believe. The Micro-USB port is used for charging, and you'll need to carry the charger around with you since the device won't charge by plugging into a computer or any of the usual small USB mains adaptors we tried.

You could in theory attach a keyboard and mouse to get around the awkward Windows touch interface, although every keyboard and mouse we stock in the lab is terminated with regular A-Type USB plugs. Good luck finding an adaptor to the Micro-USB plug for the tablet. They do exist, but you'll need to search around.

There's a similar story with the video output, here available on a Micro HDMI socket, although these are perhaps more common because Android phones tend to include this downsized connector.

The screen is not Retina-class so you'll see fuzzy text, comparable to Apple's original iPad mini. Image quality is acceptable but colours are a little milky through the thick glass front.

Touch sensitivity is mediocre, contributing to the frustration we experienced trying to operate the ill-suited graphical interface. We also noticed that the screen has an annoying flicker at lower brightness settings.

Overall build quality is average, with the mock-metal backplate made from textured plastic sprayed with silver paint. The finish is adequate, and like most modern tablet PCs there's no provision to get inside and upgrade components, assuming the memory and storage aren't soldered in place anyway.

Besides a lag-free and responsive interface, one of the most important assets of a tablet PC is its battery life. Here the Toshiba Encore showed an improvement on most Windows tablets, which have struggled to get beyond five hours. We measured six hours, 51 minutes in our looped-video rundown test, playing an MPEG-4 HD film over wireless with screen set to a comfortable 120cd/ms brightness.

The Encore's speed as measured with PCMark 7 was poor, just 2157 points, which is disappointing for a quad-core x86 processor supported by solid-state storage. Our graphics benchmarks were a non-starter as our standard Stalker: Call of Pripyat wouldn't run on this device.

Verdict

Just £250 for a portable PC that can run Windows may seem like an attractive idea, but the experience doesn't back up that proposition. Toshiba has used a cheap and slow processor to hit both price point and thermal design constraints, making a tablet that lurches rather than zips under your control. Battery life is usable if unremarkable. The familiar Windows interface is clearly not designed to work on this size screen through touch control, leaving you with just a moribund Metro touch interface. **Andrew Harrison**



£130 inc VAT**Contact**■ adventcomputers.co.uk**Read more**■ tinyurl.com/pmco4h4**Specification**

nVidia Tegra quad-core processor; Android 4.3 (Jelly Bean); 16GB RAM; 1GB graphics card; integrated 72-core GeForce GPU; 7in (1280x800) LCD; 802.11 b/g/n; Bluetooth; USB; Micro-USB; 5Mp HDR camera; front-facing VGA webcam; lithium-ion battery; AC power adaptor; Direct Stylus pen; quick-start guide; USB charging cable; 120x190x9.4mm; 320g

PC ADVISOR
RECOMMENDED

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**TABLET**

Advent Vega Tegra Note 7

Choosing a budget Android tablet isn't easy because there are so many good-quality models to choose from. Tesco's Hudl (tinyurl.com/mxhxvuk) and Amazon's Kindle Fire HD (tinyurl.com/ch6clnz) fight it out at the low end, while Google's own Nexus 7 (tinyurl.com/lxjdv5r) is the current benchmark, albeit at a higher price of £200.

Now, Curry's PC World has waded in with its nVidia-based Vega Tegra Note 7. Calling it 'nVidia-based' is a little misleading, though, as this is really nVidia's tablet with Advent branding. That's no bad thing, of course, since the Tegra Note 7 hasn't been hastily rushed out the door.

The highlight is the quad-core Tegra 4 processor, which is immensely fast, but nVidia hasn't forgotten about the rest of the tablet. There's a stylus for writing and sketching, GPS, Bluetooth 4.0, 802.11n Wi-Fi, a Micro HDMI output and microSD card slot for adding to the 16GB of internal storage. There are front-facing stereo speakers, plus front and rear cameras. Everything runs on Android 4.3 (Jelly Bean) and there's access to the Google Play store.

If there's one weakness, it's the 7in 1280x800 IPS display, which doesn't possess the sharpness of tablets such as the Nexus 7. It does, however, offer wide viewing angles, and respectable brightness levels and vivid colours.

Another area where the Tegra Note can't match the Nexus 7 is build quality: it creaks and twists whereas Google's tablet doesn't. Plus, it's 30g heavier at 320g.

Android on the whole has been left untouched, but nVidia has added a few apps and tweaks of its own. One is the DirectStylus launcher, which pops up when you pull out



the stylus. You have a choice of two applications: Tegra Note Draw and Stylus Labs Write. Both are basic, but do a decent job.

Despite its passive nature, the stylus is responsive and double-ended, with an 'eraser' on the opposite end. You have to manually select the eraser tool, but it's one of the better styli we've used.

Performance

The Note 7 is fast and loads apps quicker than just about any other Android tablet. Browsing the web is enjoyable because there's no waiting around for Google suggestions to appear, nor web pages to load.

Running the SunSpider 1.0.2 test took an average of 662ms, which makes the Vega sound slower than it is. In Geekbench 2, we recorded an average of 4088, whereas the Nexus 7 managed 2651.

It isn't as fast as the iPad Air (tinyurl.com/pn7jpy8). Using Geekbench 3, the Note 7 managed 2536 points in multicore mode; the Air, 2703 points. Still, given the price difference, it's a remarkable result.

The 72-core GeForce GPU is great for games. In fact, it's slightly faster than the iPad Air. In our Egypt HD test, it delivered 52fps against the Air's 48fps. It's an unfair comparison, of course, since the iPad has around three times more pixels to drive, but considering the Vega costs £130, it's great news for avid gamers.

In terms of visuals, certain games are already taking advantage of the Tegra 4's feature set and titles including Asphalt 8 Airborne look pretty good. Lighting effects such as shadows and lens flare add to

the ambience, but the screen's low resolution means that we still prefer the look of Real Racing 3, for example, on a Retina iPad.

As with many Android devices, the Vega's cameras aren't a reason to buy the tablet. The front webcam is a poor-quality VGA affair that's barely acceptable for Skype calls. At the rear is a 5Mp shooter which, thanks to the Tegra 4 processor, is capable of HDR photos and video.


The bad news is that photos are markedly worse than from the 5Mp camera on the Nexus 7. It appears that heavy-handed noise reduction is to blame, leaving a smeary mess instead of sharp detail.

The difference in video quality isn't so big. Footage is much better than the Hudl, but it's still lacking in detail compared to the Nexus 7.

The Tegra Note 7 should count battery life among its strengths, mainly because of its fifth, low-power core, which is all that's needed for most tasks, including video playback and web browsing.

However, in our tests we found it couldn't match the new Nexus 7. Using our usual video looping test, the Vega Tegra lasted just over eight hours - good but three hours short of the Nexus. Fortunately, the dynamic backlight feature works well and increased playback time to almost exactly 10 hours with no noticeable loss in brightness.

Verdict

For the price, the Advent Vega Tegra Note 7 offers an awful lot and is better than the Tesco Hudl in almost every way. If you're after a budget Android tablet, this is a great choice.  **Jim Martin**



£349 inc VAT

Contact

■ uk.playstation.com/ps4

Read more

■ tinyurl.com/kc248ux

Specification

x86-64 AMD 'Jaguar' processor; 1.84Tf1 GPU; AMD next-generation Radeon-based graphics engine; 8GB GDDR5; 500GB disk drive; Blu-ray drive; 2x USB 3.0; 1x AUX port; ethernet; 802.11 b/g/n wireless; Bluetooth 2.1; AV Output; HDMI out port; digital output socket

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



GAMES CONSOLE

Sony PlayStation 4

The battle between the PlayStation 4 and Xbox One is in full swing. Last issue, we reviewed Microsoft's offering (tinyurl.com/m6j4khs), so here we're looking at Sony's console.

The asking price of £349 is £80 cheaper than the Xbox One, however, that doesn't include the PlayStation Camera, an optional accessory that will set you back an extra £55. At the moment, this isn't a must-have because while it offers voice control and is great for logging into the console, it doesn't do much else. There are a few pre-installed mini-games in the Playroom, but these won't keep you entertained for long. That doesn't mean more won't come along in the future, but for now it's worth waiting.

On the inside

Inside, the PS4 is equipped with an 8-core AMD 'Jaguar' CPU, clocked up to 2.75GHz. This is paired with an 800MHz AMD Radeon GPU and a healthy 8GB of GDDR5 RAM. It's a powerhouse and on paper is more powerful than the Xbox One, so there's bragging rights there at least. However, with the new console being so, er, new, we've yet to see what it can really do.

Somewhat mimicking the Nintendo Wii U's (tinyurl.com/6j49lhl) gamepad, the PS4 allows users to play games on a PS Vita. There are also iPhone and Android apps that let you control your console remotely.



A button on the DualShock controller turns the PS4 on and the console's interface is slick and easy to use - a big improvement over the PS3. A horizontal line of apps/games are displayed, and you can scroll down to expand the menu. At the top is a row of smaller icons for options such as the PlayStation Store.

You'll need to sign into, or up for, a PSN (PlayStation Network) account to get the most out of the PS4. Long gone are the days where you simply inserted a disc and started playing, although you can do so if you like. A PSN account will give you access to the PlayStation Store where you can download games, films, music and apps. It will also connect you with your friends and is necessary to use functions such as the web browser. Features including online multiplayer, cloud storage and the Instant Game Collection require a PlayStation Plus subscription, priced £39 for a year.

Playing the game

This is much more of a gamer's machine than an all-round entertainment hub. Although it supports Netflix, LoveFilm, BBC iPlayer and Demand 5 from the off, which is more than the Xbox One, you can't play Blu-ray discs without downloading additional software and you can't play media content via the USB ports - they are for charging controllers.

So it's disappointing to find a lack of games.

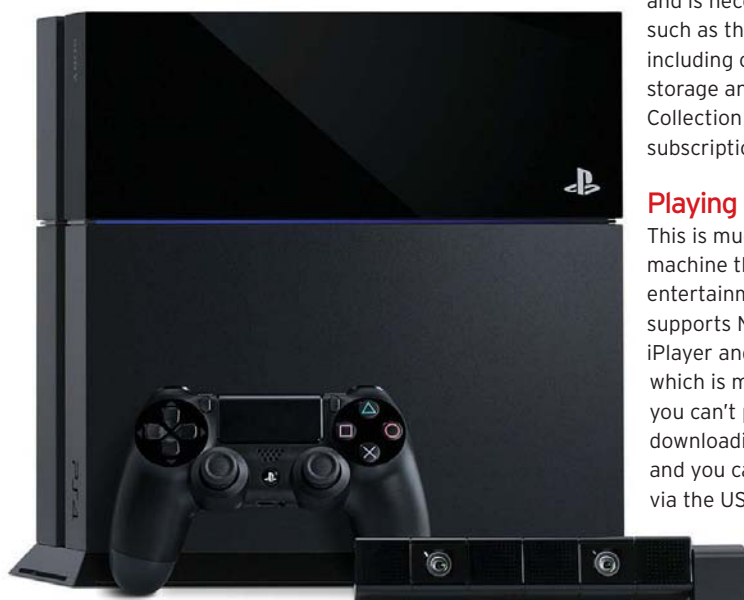
Yes, over 20 are currently available, but the vast majority of these, such as Assassins Creed 4: Black Flag and FIFA 14, are available on older consoles. There are just a handful of exclusive games, including Resogun and Killzone Shadow Fall, and there's no killer title. The Xbox One has a better launch line-up. Furthermore, you can't play PS3 games on the new console.

It's on this where you need to decide whether it's worth paying out £349. If you can wait, then you might be better off getting the PS4 when more games are released and the console is cheaper.

On the plus side, the DualShock 4 controller is Sony's best yet. It's compact, light and ergonomically sound. The analogue sticks are a little small, but the rubber coating will help you avoid those annoying slips where you end up smashing your car into a wall on driving games. The shoulder buttons are also easier to use. New additions include the touch sensitive trackpad in the middle and integrated coloured 'Move'-style light, which can be used with the PlayStation Camera.

Verdict

The Sony PS4 is a good-looking and powerful console. We like the new DualShock controller and the smooth interface. It's also cheaper than the Xbox One, but a lack of killer titles mean it's worth hanging back for a while. **Chris Martin**



£99 inc VAT**Contact**■ fitbit.com/uk**Read more**■ tinyurl.com/pks7ohj**Specification**

Windows XP/Vista/7/8; OS X 10.5 or later; lithium-ion polymer battery; wireless sync dongle for laptop, PC, and Mac; charging cable; Bluetooth 4.0

PC ADVISOR

RECOMMENDED

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**FITNESS TRACKER****Fitbit Force**

The Force is the latest activity tracker from Fitbit, maker of the Flex (tinyurl.com/lcfewyd). You keep the wristband on all day and night as it monitors both your physical activity and 'sleep efficiency'.

Like the Flex, it's compatible with free iOS and Android apps. These are simple to use and sync with the tracker via Bluetooth, so you don't need to physically attach the device to your smartphone or tablet. The data is presented in good-looking graphs and you can see how each day compares. You can also set up email alerts with weekly stats and updates on how you performed against your Fitbit-using friends.

The Force's OLED displays more data than that of the Flex. Press the button on the left to see the time and click through daily steps taken, distance travelled, floors climbed, calories burned, and very active minutes.

The device uses a MEMS three-axis accelerometer to monitor and understand your movement. This analyses acceleration data to provide detailed information about frequency, duration, intensity and patterns of movement to determine your steps taken, distance walked or run, calories burned and sleep quality.

We're not convinced by the accuracy of the calorie counter, and thought it rather generous. But, as with all such trackers, it's comparative, so whether accurate or not, you can compare to other days and set yourself meaningful targets.

A feature found on some other fitness wristbands - measuring stair work - is now available on the Force. This option isn't offered by the Flex or Nike's FuelBand SE (tinyurl.com/ohmgxk9). To count the flights of stairs, the device uses an altimeter that calculates altitude based on atmospheric pressure. It registers a floor when it detects continuous motion combined with an elevation gain of about 10 feet.



The Force also contains a vibration monitor, which it uses to pulsate when alarms are triggered. The best vibration you'll feel is that given when you reach your target for the day - set at 10,000 as default, but one you should raise when you consistently hit your target.

Sleep monitor

Another activity that's difficult to verify is the Sleep monitor. The Force's motion sensor analyses your movement patterns to determine whether you're asleep, restless or awake. To turn on the sleep-tracking feature, you hold down the side button until a timer starts.

The Flex and Force offer much more detailed Sleep analysis than Nike's FuelBand SE. That said, we were able to lie awake pretty still, which the Fitbit measured as asleep. Setting the Force into Sleep mode isn't as certain as with the Flex, although we're sure that with more experience we'll get the hang of it.


The Flex comes with two wristbands - one large, one small - whereas the Force comes with just the size you ordered: again, either large or small. The latter will fit a wrist measuring between 14- and 17.6cm in circumference, while large option has been designed for a wrist between 16.1- and 20.9cm. If you're not sure which one is for you, download Fitbit's sizing tool from tinyurl.com/kj7kn4f.

The Force weighs hardly anything and is comfortable to wear. It's not so big as to resemble a probation tag, and now not only looks like a slim watch but works as one, too.

The wristband is made of flexible, durable elastomer material, similar to that used in many sports watches. There's also a 'surgical-grade' stainless steel clasp to fasten the wristband. It's water resistant and rain/splash- and sweat-proof. It shouldn't be worn while swimming or showering, though. Indeed, Fitbit even recommends you take it off when washing the dishes.

Fitbit says that on a full charge, the battery will last seven to 10 days, about the same as the Nike FuelBand. To charge the device, plug the charging cable directly into the tracker, which remains in the wristband. The cable is still proprietary, so you'll have to remember to take it away with you on holiday or business trips, but you're less likely to lose either the tracker or the wristband as was possible with the Flex. Spare charging cables are available for £16.95, but a simpler USB option would have been appreciated - we have enough different types of charger already.

Verdict

The Fitbit Force is a big step up from the Flex, although it's also larger. The more informative display means you can ditch your watch and inspect your smartphone app less for up-to-date data. Comfortable and light, with a great smartphone app and desktop dashboard showing you all your daily, weekly and monthly performance stats, the Fitbit Force should make a real difference to you hitting your fitness targets.  **Simon Jary**



£679 inc VAT

Contact

■ wdc.com/en

Read more

■ tinyurl.com/l2gfr6l

Specification

4-bay NAS drive; 4x WD 2TB Red hard disks; 2GHz Marvell 88F6282A1 processor; 2x gigabit ethernet; 2x USB 3.0; 512MB RAM; 12V DC external power supply; 209x220x160mm; 5.8kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆



NAS DRIVE

WD My Cloud EX4

We liked the My Cloud drive that Western Digital launched recently (tinyurl.com/mybba8d), which combines a compact NAS drive with a 'personal cloud' option that lets you gain access to your files when you're away from home or the office.

The EX4 is the latest addition to the My Cloud range, and while it looks completely different, it's based on the same software. This means it has a number of features in common with its predecessor.

Rather than the slimline, pristine white casing of the original My Cloud, the EX4 is a bulky black unit that houses four separate drive bays. More like a traditional NAS then, such as a QNAP TS-421 (tinyurl.com/mcywub8).

The standard My Cloud model is a single drive unit that provides a maximum of 4TB of storage, though, the four-bay EX4 can cope with 4TB in each drive bay, providing a total capacity of 16TB.

Even so, Western Digital says the EX4 is still aimed at home and small business users. And while it's not exactly elegant, the design of the EX4 is straightforward and practical. The unit is solidly built, and it's easy to pop open the bays at the front in order to install or replace the 3.5in SATA disks.

You can buy the EX4 as an 'unpopulated' empty box for £319,

and then add your own disks to provide whatever storage you need.

Alternatively, you can buy it with 8-, 12- or 16TB storage pre-installed, priced at £679, £799 or £1,000 respectively. The EX4 supports RAID 0, 1, 5, and 10, and JBOD (just a bunch of disks) configurations, and has two USB 3.0 ports tucked around the back, so you can add extra storage. You'll also find two gigabit ethernet ports on the rear for wired network connection.

Despite its rather intimidating appearance, we were relieved to see that the EX4 offers the same admirable ease of use as its predecessor. Western Digital's setup program walks you through the basic installation options, while the browser-based Dashboard provides easy access to additional options, such as setting up shared folders and remote 'cloud access'.

The EX4 is compatible with Apple's Time Machine for simple backups, and Western Digital's My Cloud app is available for iOS and Android devices, making it easy to remotely connect to your files.



It's not the fastest NAS drive we've seen, though. We tested the 8TB version with four 2TB disks pre-installed. Using a 5GB batch of mixed test files, the EX4 produced a respectable read speed of 35MB/s, while the write speed slowed to 20MB/s. To be fair, the My Cloud range is intended for home and small business users, rather than for larger organisations that require high-performance backup systems.

Verdict

There are faster NAS drives available, but the My Cloud EX4 should still be adequate for the home users and small businesses for whom it was. It's also much easier to install and run than many of its more business-oriented rivals, making it a good choice for people who want a reliable, high-capacity storage system for use at home or in their office. **Cliff Joseph**

SOUNDBAR

Samsung HW-F551

Typically selling for £329, the HW-F551 sits just beneath the brand's range-topping HW-F751. It may lack the stylised vacuum tubes that distinguish that particular model, but it looks better than many of its competitors. Rather elegantly, there's an LED status display that scrolls from behind the grille.

At 943mm wide, the HW-F551 is best partnered with flat screens between 46- to 55in. Connectivity is good: there's an HDMI loop-through with ARC (Audio Return Channel), in addition to an optical digital audio input, stereo minijack and rear-mounted USB reader. Bluetooth streaming is available, not just between 'bar and mobile

device, but also as a wireless bridge to the TV. Dubbed SoundShare, this is an alternative to using a wired HDMI connection. Partnering the soundbar with a Bluetooth mobile is a quick and painless experience, and we didn't experience any dropouts. It's no real replacement for the reliability of a hard-wired HDMI connection, though. A stubby IR remote is also supplied, which works perfectly well.

Setup is straightforward. There's no auto calibration routine, so it's simply a matter of plug and play. The subwoofer connects automatically when required, and goes into standby when the soundbar is switched off.

Overall performance is impressive. The wireless subwoofer is well integrated, offering rich bass that complements rather than overwhelms the soundbar's upper range. It's best positioned quite close to the main enclosure, as it handles most of the work up to 200Hz, at which point it delegates to the soundbar.

Samsung quotes a total output power of 310W for the system (150W assigned to the subwoofer), and while that should be taken with a pinch of salt, there's no doubting the clout on tap. The HW-F551 can slam out the action sequences with the best of them, offering a pleasingly deep and tight bass response. When

£329 inc VAT

Contact

■ samsung.com/uk

Read more

■ tinyurl.com/of075r6

Specification

Bluetooth; 3D Sound Plus/DSP modes; Dolby Digital 5.1 decoder; soundbar 5.5x94.3x6cm; subwoofer 36.9x29.1x29.1cm; 9.45kg; 1-year RTB warranty

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆



£230 inc VAT**Contact**■ swann.com/uk**Read more**■ tinyurl.com/n9fm5w2**Specification**

648x488-pixel resolution camera; 3.6mm focal length; 1/3in CMOS sensor; 69° viewing angle; IR-illumination LEDs; 50x50x70mm; DVR unit: 4x BNC for composite video input; 320GB HDD; 2x USB 2.0; ethernet; RCA stereo audio input; 200x200x45mm

Build: ★★★★★☆

Features: ★★★★★★

Performance: ★★★★★☆

Value: ★★★★★☆

**SECURITY CAMERA KIT****Swann DVR4-1500 4 Channel Compact DVR & Pro-510 Camera**

This Swann kit offers a different solution to today's common IP-based security cameras. The system comprises a single camera encased in a rugged aluminium shell, with infrared LEDs for night vision. The second part is a standalone digital video recorder (DVR) unit with a 320GB disk for recording.

With the addition of a computer monitor or suitable TV with VGA port, you can use the system without a PC or network. However, the interface and recording features are accessible only after connecting the DVR to your network.

The digital recorder has a graphical interface that's controlled by the included mouse. Any typing is performed on a virtual keyboard, although this is rarely required. The camera and DVR connect by a cable (18m), which carries power and an analogue video signal, connecting to the DVR with BNC plugs. The monitor output is a familiar VGA port, so if you intend to connect to a television you'll need this computer video input.

The easy setup of this system is one of its strongest features – connect a monitor and the mouse to the DVR box, attach the camera cables and you're nearly there. Apart from setting the time and date on the DVR no additional setup is required to use the system.



Its default mode should be fine for the majority of home users: the system records video after sensing motion, and stops a short time after the motion has ceased – 23 seconds by our stopwatch – which should prevent anyone pacing in front from being split into multiple files.

Where this system shines is in customisation. The sensitivity of motion detection can be set to suit your installation, helping prevent false-positive triggers from pets or moving foliage.


The camera's rated resolution is 644x488 pixels according to the specification, while the sensor is a 1/3in CMOS. As a result fine details are pixellated and the image is noisy, however, it does maintain good contrast. This makes identifying moving objects easy, though, not faces at a distance.

The playback of recorded footage is handled well. You can watch the

camera's recording history from a monitor or use a dedicated playback menu. Here you can search for videos by date or time; but most interesting is the SmartSearch facility. This allows you to specify the areas of the screen you'd like to scan for movement, then search the current recording for movement in just that area. All movements are then highlighted on the timeline, reducing the amount of time required to scrub through the video.

There are also iOS and Android apps for remote monitoring on your handset, although we didn't test how well these worked.

Verdict

The picture quality may not be impressive, but it's on a par with similar budget cameras. Yet the system as a whole with the DVR makes this an attractive proposition for the money.  **John Taylor**




the Expendables roll into town at the start of their sequel, there's thumping heft to the onscreen action. During a particularly thunderous sequence from *The Hunger Games*, Katniss Everdeen persuaded the soundbar to sup a peak of 33W from the mains, while the thirsty subwoofer gulped down upwards of 78W. In the average UK

living room, this translates as being pretty darn loud. But the HW-F551 is also rather refined when it comes to speech, so it's not a total hooligan.

The rear-mounted USB input isn't particularly convenient, but file compatibility is broad. MP3, AAC, WAV, WMA and FLAC tracks all play. Navigating a stick via simple linear controls isn't practical, though. Rather unusually, the HW-F551 also sports a Dolby Digital decoder, which means it won't mute when hooked up to a Blu-ray player or Sky box set to output a 5.1 bitstream. There's also a 3D sound processing mode, but don't expect anything remotely immersive from it. The HW-F551 is best considered a stereophonic

proposition. While there are a smattering of DSP modes, they don't contribute anything meaningful. The News mode, for example, merely makes TV anchors sound as if they're reporting via a bad landline, while Cinema and Sports offer incrementally awful levels of reverb. The HW-F551 is unquestionably at its best when heard neat.

Verdict

Overall, the HW-F551 is a slick, well-behaved 2.1 option that improves TV audio without causing an undue racket. It delivers a wide, crisp soundstage, gets gutsy when it needs to and is extremely easy to live with.  **Steve May**

£455 inc VAT

Contact

■ xfxforce.com/en-gb

Read more

■ tinyurl.com/npet8er

Specification

AMD Radeon R9 290X; 4GB GDDR5; 1GHz Boost clock; 1.25MHz memory clock (5GHz DDR effective); 512-bit memory interface; 2816 stream processors; 176 Texture units; 64 ROP units; PCI-E Interface; DirectX 11; 2x DVI, 1x HDMI; 1x DP; 8-pin and 6-pin PSU connectors needed; 2-year warranty

PC ADVISOR
GOLD

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



GRAPHICS CARD

XFX Radeon R9 290X Boost Edition

After several months of retooling older technology as modern-day finely-specified pixel-shufflers, AMD has unleashed its latest headliner, the R9 290X Boost Edition.

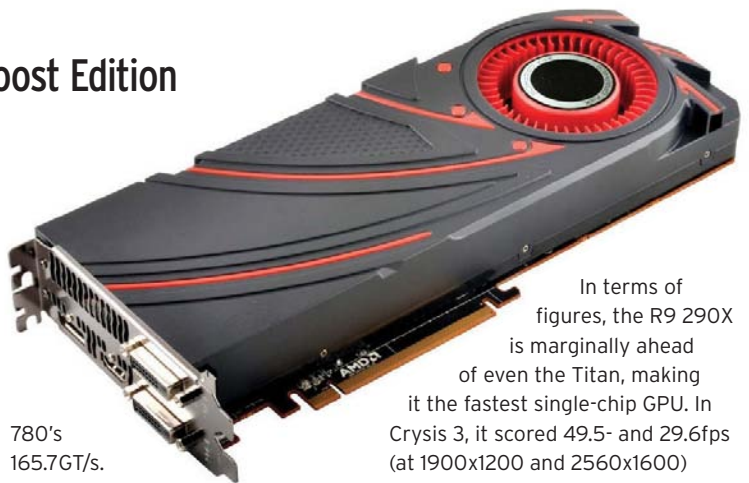
A first glance at the 290X shows it to be something of a monster, featuring a substantial 6.2 billion transistors. The Radeon 7970 (tinyurl.com/kvvrk9y), by comparison, uses just 4.31 billion, and even the heavyweight nVidia Titan (tinyurl.com/cju8kzs) offers slightly more, at 7.1 billion. For all its hardware, though, the 290X isn't as gargantuan as you might think, and the size increase is small given the extra firepower.

So what do you get for the extra kit? Well, a 512-bit memory interface, for a start, a move that comfortably puts the nVidia GTX 780's (tinyurl.com/nh6p42b) 384-bit version in the shade. The 290X doesn't stop there either, ratcheting up the quantity of Raster Operations from the 780's 48 to a sizeable 64, while the 4GB of GDDR5 RAM is even more comprehensive than the 780's healthy 3GB. The 290X does lose a little ground in terms of texture units, and its 176-strong complement is eclipsed by the 780's 192, while the Titan packs a mighty 224. Having said that, 176 is still a substantial number of texture units, adding to some strong specifications overall.

With some impressive hardware behind it, the R9 290X doesn't have to push the clock speeds too much. It's rated at 1GHz, although that's taking into account the Boost capabilities - AMD has been reticent about revealing the standard figure. The RAM is itself clocked at 5GHz (or 1.25GHz before the quadrupling nature of the RAM is taken into account).

This combines beautifully with that heady 512-bit interface to create a sterling memory bandwidth figure of 320GB/s. This isn't as high as it might have been. Nonetheless, not many cards can reach a memory bandwidth of 320GB/s.

It also does very well on texture fill rates, and while it may be inferior to the nVidia cards in terms of the quantity of texture units, it compensates with a better core speed. Its headline figure of 176GT/s is significantly ahead of the GTX



780's 165.7GT/s.

The Titan does stretch ahead with 187.44GT/s, but given that the latter card has a massive 224 texture units (to the 290X's 176), the difference is relatively small. Particularly so given the Titan's very steep price tag. In terms of both specifications and fill/bandwidth rates, then, the 290X is stunning.

Also notable is the doubling of the number of geometry engines (from two to four), and the GCN (Graphics Core Next) 1.1 architecture has been tailored towards producing superior performance in high-intensity Compute applications. This was the area where Titan destroyed the competition, and the 290X is now also extremely well-endowed in this area, matching the Titan much of the way. This should serve it well in the future.

Game on

For many current-day gamers, though, it'll be some of the other features brought in with GCN 1.1 that make the real difference. Three-dimensional sound is significantly improved through the inclusion of TrueAudio, while the new-look CrossFire XDMA works through the PCIe bus, allowing AMD to dispense with the need to fit bridges between the cards, and enhancing its ability to handle multiple monitors.

There's also the question of Mantle. Only time will tell if this can replace OpenGL or Direct3D as the main API. It gets good support in this card and, if AMD is successful, we could see a fragmentation of the games market, with choosing nVidia over AMD serving to restrict you in your choice of game. This isn't necessarily welcome for players, and we wait with interest to see whether Mantle can secure the dominant position AMD hopes it will.

In terms of figures, the R9 290X is marginally ahead of even the Titan, making

it the fastest single-chip GPU. In Crysis 3, it scored 49.5- and 29.6fps (at 1900x1200 and 2560x1600) to the Titan's 49.2- and 29.5fps respectively. The GTX 780 is slightly further back, on 48.4- and 28.7fps.

In the more straightforward Stalker: Call of Pripyat, the lead is slightly larger at the lower resolution - 122.2fps against 121.7fps for the Titan. However, the Titan wins by a single 0.1fps at the 2560x1600 resolution - the 290X gets 90.9fps to the nVidia's 91.0. The 780 is some distance behind here, on 114.3- and 82.2fps respectively.

In Bioshock Infinite Rage, the 290X is very much the better card, recording figures of 93.1- and 60fps as against the Titan's 91.9- and 58.8fps. The GTX 780 is a few frames down again, this time with 89.5- and 55fps. We also tried a resolution of 3840x2160 here, finding the R9 290X to be better again, but by just 0.1fps - 36.7fps to the Titan's 36.3fps. Only slightly faster than the Titan overall, the R9 290X is a hefty distance ahead of its closely-priced rival, the GTX 780.

Not that the R9 290X is a perfect card. It runs hotter than any other card we've tested to this point, and consumes rather more power than its TDP of 250W might suggest - consuming an average of 31W more than the 780, despite both cards having the same TDP. It's not a quiet card either, and despite XFX's best efforts, it's three decibels louder than the GTX 780 in testing.

Verdict

For those who value noise and lower power consumption, the GTX 780 is the better product. In terms of performance, though, there's no question that the R9 290X cruises past its similarly-priced rival. The card is loud and furious, but it romps through the benchmarks, beating even the Titan in the majority of our tests. Robin Morris

£235 inc VAT**Contact**■ benq.co.uk**Read more**■ tinyurl.com/pmv5L5v**Specification**

24in monitor; 1920x1200-pixel resolution; 16:10 aspect ratio; IPS panel technology; 16.7M colours; white LED flicker-free backlight; matt screen coating; stand adjustments: height (130mm), pivot, swivel, tilt (-5/20 degrees); rated brightness 300cd/m²; rated contrast ratio 1000:1 (typical), 20,000,000:1 (dynamic); viewing angles (H/V) 178/178 degrees; 5ms response time; DVI; DisplayPort; VGA; audio input; headphone output; 2x 1W speakers; 574-444x555x236mm; 6.7kg; 3-year warranty

PC ADVISOR
RECOMMENDED

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★★

**24IN MONITOR****BenQ BL2411**

The BL2411 comes in the old-school 16:10 widescreen format, prevalent before the influx of shallower, wider 16:9 displays all but forced them out of the market.

This means you get a screen resolution of 1900x1200 pixels, rather than the now standard 1900x1080. This gives you extra height to play with, which makes a noticeable difference when working with vertically-oriented tasks such as word processor documents or web pages, so it's more suited to work than pleasure.

Being a business display, it also comes with a full set of ergonomic stand adjustments, allowing it to tilt, swivel or pivot into your chosen position along with a generous 13cm height adjustment.

Its plain matt black design has a thin multi-monitor-friendly bezel, with a minimalist business-like look, devoid of any fancy trim. Its trio of inputs - VGA, DVI and DisplayPort are complemented by analogue audio jacks, and a small pair of internal 1W stereo speakers.

Notably absent is an HDMI port, so you may find yourself requiring an adaptor if you want to connect, for example, a Blu-ray player that has no other type of connection. You'll also have to do without a built-in webcam or USB hub.

In keeping with the minimal design, there are no visible buttons on the front of the display other than the illuminated touch-sensitive power switch. Bringing your hand close to this switch causes a row of five white dots to light up. Touching any one of these will cause a quick control menu to pop up, giving you access to a selection of picture modes, input selections, audio control or to the full menu system. The function of each button is always displayed next to it on the screen, so there's no confusion over which button does what, making the whole interface simple and intuitive to use. Our one quibble is that there's a perceptible lag between touching a control and seeing a response onscreen, slowing down the whole process somewhat.

What sets this display apart from previous models, though, is its flicker-free technology, which BenQ says significantly reduces eye strain.



Most flat panel displays control their brightness by turning it on and off many times a second. The ratio between periods of 'off' to 'on' determines how bright we perceive the display to be. BenQ's flicker-free monitors adjust the brightness by reducing or increasing the brightness.

The idea is that time spent in front of the screen becomes less fatiguing and easier on the eyes. The best part is, even if you're not susceptible to flicker-induced eye strain, you won't have to pay any more as the flicker-free system incurs no additional productions costs. It's simply the way it should have been done to start with.

You can see if your own monitor flickers by displaying a mostly white screen and waggling a pen or your fingers in front of it. A stripy, strobing effect indicates flicker.

The flickering effect occurs when the display has been dimmed. At full brightness, there'll be no flickering on either type of display.

Other eye strain-reducing technologies are also built in, including an ambient light sensor to automatically adjust the monitor's brightness to suit that of your room and an optional automatic reminder that tells you to take a break after a preset time. The panel also features a matt anti-glare surface for maximum readability.

Performance

The BL211PT features a high-quality IPS display panel, which provides wide viewing angles and 100 per cent sRGB coverage. In our tests, the display gamut slightly exceeded


sRGB, especially in the greens. It also showed excellent colour uniformity across the surface of the screen combined with very good colour accuracy. It performed well straight out of the box, with little adjustment required.

Our checker board contrast ratio test peaked at 650:1 which is a good, although not outstanding result for a monitor of this type. We would therefore regard this as display that's well-suited to graphical work, such as photo editing, as well as general office tasks.

Power consumption is also commendable, with 21W required at full brightness, dropping to 13W at our standard brightness of 120cd/m². Even if you use the BenQ BL211PT at a high-brightness setting, the monitor's Eco sensor can be programmed to temporarily turn off the display automatically when it detects you're not sitting in front of it.

You can also tune the sensor to match how far you usually sit from the screen. At the nearest setting, we found the monitor would switch off while we were still typing.

Verdict

There's nothing fancy or stylish about this monitor, but its ergonomic features and flicker-free backlight make it a pleasure to use. More suited to work than play, the BenQ BL211PT also delivers display quality of a standard high enough for graphical applications. It's not the least expensive 24in monitor you can buy, but it delivers superb performance and ergonomics for the asking price.  **Paul Monckton**

£402 inc VAT

Contact

■ samsung.com/uk

Read more

■ tinyurl.com/mnkpm2q

Specification

mSATA 6Gb/s; also available in 120-, 250- and 1000GB capacities; Turbo Write technology; LPDDR2 cache; Samsung Magician software with RAPID mode; 51x30x3.7mm; 8g

PC ADVISOR
RECOMMENDED

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



MSATA SOLID-STATE DRIVE

Samsung 840 EVO mSATA 500GB

The ultraportable laptop that inspired Intel to dream up the marketing label of Ultrabook also lead to a new fashion for small mSATA solid-state drives.

With such a slim body, it's unsurprising that Apple had to use a new storage form-factor beyond the traditional 2.5in SATA disk for the sake of the original MacBook Air.

It didn't use mSATA, though. The storage drive Apple chose was based on the 1.8in IBM Microdrive, exactly like that which revolutionised personal audio after finding its way into the very first iPod. Alongside the small 1.8in disk, an all-flash model of the Air was available as the flagship model from the start, if with just 60GB capacity. But the die for small form-factor SSDs had been cast, and without the spinning platters of a hard-disk drive, their dimensions could shrink considerably.

Now six years after the first MacBook Air many laptops rely on little mSATA drives, a tiny flash drive using scaled-down Serial ATA-style edge connectors. And following the successful launch of the first triple-level cell (TLC) SSDs last year with the 840 EVO Series (tinyurl.com/l5edqoy), Samsung has now similarly trimmed down its 2.5in drives to mSATA proportions.

The Samsung 840 EVO mSATA drive is available in four capacities: 120-, 250- and 500GB, plus a new 1TB configuration that's a world-first for this size of SSD.

Pricing is said to be based on the regular SATA versions from the 840 EVO Series. We found this 500GB model available for £402 on Amazon, considerably higher than the £244 asked for the standard SATA EVO 500GB, but at time of testing this SSD is in short supply, which will inevitably put up prices initially.

Like the full-size 840 EVO, the mSATA uses 19nm toggle NAND flash, which Samsung deceptively calls '10nm class' to fluff up the spec sheet. And in charge of the flash is again a Samsung-made MEX controller, using a three-core ARM processor. Among its tricks are a scheme to get around the terrible write performance of tri-layer cell NAND flash. Samsung calls

it TurboWrite Buffer, and it's made from a part of the main flash cells that's reserved for writes at higher speed. It does this by treating the slow 3-bit MLC flash cells like high-performance SLC cells, in a way the company is unable to explain clearly.

The mSATA format has potential for working across various computing platforms, and even NAS and storage products that can accept small flash drives to accelerate big disks' performance. Samsung aims its computer products exclusively at Windows PCs, though, and for these users, it offers extra software to accelerate performance further.

Real-time Accelerated Processing of I/O Data - or RAPID - is the backronym for Nveto's intelligent 'hot data' management, a company bought by Samsung for this software technology. It uses more caching from DRAM than is normal in Windows, along with some compression techniques.

Performance

We tested a special press sample running custom firmware. This means we can't be sure that the results are typical of final retail models. Those we recorded in the lab were garnered by some of the usual industry benchmark software, and the numbers should speak for themselves.

In the AS SSD test a nominal point score is awarded from eight separate transfer tests. When we reviewed the 750GB Samsung 840 EVO in standard 2.5in size, it scored 1141 points. This new 500GB mSATA version scored 1147 points, which is within the bounds of experimental error to suggest the same overall performance.

Looking more closely at individual results, the full-size SATA version had slightly higher top sequential reads, at 509- against 486MB/s; and the roles were reversed in write performance,



with 481- and 477MB/s for mSATA and SATA respectively.

Samsung claims the golden 100,000 IOPS result for this 840 EVO mSATA. Last time around we got close in AS SSD with 93,107 IOPS for 4k reads at 64-thread level. This time we hit 96,662 IOPS, higher but just shy of the notional 100k barrier.

CrystalDiskMark let the mSATA 840 EVO push through the ceiling again though, recording 102,220 IOPS in 4k files read with 32 threads.

In one important respect, we even saw a major trade upwards in performance. Where QD=1 4k random writes were before capped a little under 100MB/s for SATA model, the mSATA model reached 142MB/s here. And for tyre kickers who just want to see the biggest sequential read/write numbers, the 500GB Samsung 840 EVO was measured at 536MB/s writes and 554MB/s reads, effectively throttled back by the SATA interface itself here in all probability.

In use, we found the mSATA EVO to run extraordinarily hot - as felt through the metal case of an mSATA-to-SATA adaptor enclosure.

Verdict

The Samsung 840 EVO in its miniaturised mSATA form remains a force to be reckoned with. It met the performance of the version we first tested last year, and in some metrics was found to slightly exceed those results. If you're looking for a high-performance mSATA SSD for your laptop, PC or storage product we have to concede that this little drive really delivers.

✉ Andrew Harrison

Apple refunds £20m for 'unfair' in-app purchases

Federal Trade Commission tells Apple to make clearer to customers warnings about in-app purchases

Apple has agreed to refund a total of \$32.5m (£20m) to customers for 'unfair' in-app purchases on iPhone and iPad. The technology giant has reached an agreement with the US Federal Trade Commission (FTC) following a complaint that apps aimed at children contained virtual goods and chargeable items. According to 9to5Mac, Apple has been negotiating with the FTC for months on the matter.

In a statement, FTC commissioner Maureen Ohlhausen wrote: "Although Apple adjusted certain screens in response and offered refunds, it still failed to notify account holders that by entering their password they were initiating a 15-minute window during which children using the app could incur charges without further action by the account holder."

"Even if Apple chose to forgo providing this information - the type of information that is critical for any billing platform, no matter how innovative, to provide - in favour of what it believed was a smoother user experience for some users, the result was unfair to the thousands of consumers who subsequently experienced unauthorised in-app charges totalling millions of dollars."

Offending apps include Tap Pet Hotel, Dragon Story and Tiny Zoo Friends. As part of the settlement, Apple must make clearer warning to customers about in-app purchases.

In response to the ruling, Tim Cook, CEO of Apple, said: "It doesn't feel right for the FTC to sue over a case that had already been settled. To us, it smacked of double jeopardy. However, the consent decree the FTC proposed does not require us to do anything we weren't already going to do, so we decided to accept it rather than take on a long and distracting legal fight."



Cook also said that last year the firm set out to refund any in-app purchases that were made without a parent's permission. This resulted in Apple emailing 28 million App Store customers and, if the emails bounced, a postcard was sent. Apple received a total of 37,000 claims and reimbursed them all.

The news comes shortly after Apple announced that customers spent more than \$10bn (£6bn) in the App Store during 2013, with three billion apps downloaded in December, making it the most successful month ever for app downloads.

LATEST APPS



Wordeo

Price: Free

Available on: iPhone

Wordeo is a new social-networking app that lets users combine text with video content to make a personalised message. The app gives access to Getty Images' video library, but users can also use their own footage. iPad and Android support will arrive later in the year.



The Voice

Price: Free

Available on: iOS and Android

Designed for the latest series of BBC's talent show, The Voice gives viewers at home access to performance clips, news, galleries and backstage videos. It also has a HomeCoach game, which lets users decide whether to turn around their chair and earn stars if the real coaches do the same.



Final Fantasy VI

Price: £10.99

Available on: Android

Released in 1994, Final Fantasy VI is now available on Android devices, with 'painstakingly' recreated graphics. Set one thousand years after the War of Magi, follow the story of Terra and Locke as they fight to escape the clutches of the evil Empire.



Barclays Mobile Banking

Price: Free

Available on: Windows Phone 8

Barclays' app for banking on the go has arrived on Windows Phone. Users over the age of 16 with a Current account can manage their accounts, check transactions and make transfers and payments. The app will also locate the nearest branch or ATM.

GAME

Cut The Rope 2

69p

Contact

■ bitstrips.com

Read more

■ tinyurl.com/p96qLjq

System requirements

iOS 4.3 or later,

84.4MB RAM



Cut The Rope is one of the most successful iPhone games ever; a cheery, simple but perfectly crafted physics puzzle game, where you have to feed a series of sweets to a cute monster called Om Nom.

He sits placidly but hungrily in one part of each level, and the sweet hangs in another. By slicing through ropes, plumping air cushions, popping balloons and generally harnessing the implacable laws of physics (all via beautifully intuitive and responsive touchscreen gestures) you manoeuvre one into the other, preferably collecting three stars along the way.

After a few cautious semi-sequels, such as Time Travel (tinyurl.com/n7q4s8c), ZeptoLabs has finally launched the official second instalment in the franchise. Cut The Rope 2 is very much like the original, with just a few new gameplay mechanics to play with and some minor cosmetic tweaks. In fact, Time Travel's big feature - that each level features two Om Noms, both of whom want feeding - has a bigger effect on the way the puzzles play out than what we've got here.

The biggest change to gameplay is the addition of helper monsters that vary according to the worlds you've completed. In the Sandy Dam world, for instance, you get a chubby lizard who sticks out his tongue to form a bridge; in the Junkyard the game adds a sort of sad gelatinous cube, who multiplies when tapped and can thus be used to raise platforms. And so on.

This is all very nice - and these 'Nommies' are pleasingly drawn and characterful - but it takes a while for the more interesting ones to appear. For the entire first world, you just get the little hovering helicopter chaps (see left), and there are a lot of levels to get through in each world.

And even with these new

characters, the way the levels work is very much the same. You work out the route the sweet (or occasionally Om Nom himself) needs to take, then have a few goes until you get the timing right. Then you focus on getting all three sweets or stars.

However, there's now one more stage after that. Each level offers a medal for accomplishing a set of objectives: sometimes just to beat a specified score, but often to get a certain number of stars without using particular items of equipment. If you get all the medals in a world, the game unlocks four new levels, which in turn unlock a victory video - so there's plenty of incentive to go for the medals.

Medal objectives

It's certainly a more varied and entertaining task going for these medals than the old completist quest of collecting all the stars, since the objectives vary. But it's noticeable that getting every star has got much easier; on most levels you'll manage this almost at once, before moving on to the medal. The medals are often extremely tricky, though. Which is nice.

There's one other difference between the first Cut The Rope and this game, and sadly it's not something to celebrate. Cut The Rope 2 has plenty of optional in-app payments (IAPs), and while that's not in itself a terrible thing, it is when they intrude so much into the gameplay.

If you complete a level with fewer than three stars, a flashy message appears asking if you'd like to know how to get all of them - the first time, too, not after you've been floundering for dozens of attempts. If you agree, you can use up one of your limited number of 'solutions', whereby a glowing flame thing zips around the level showing you what you ought to be doing.

Naturally you can top up your supply of solutions in the shop: six for £1.49, 12 for £2.49, 25 for £2.99



or an infinite supply for £17. For those who just spat out their tea, yes you did read that right: £17. It beats us why anyone would pay so much not to play a game they've paid for, but there you go.

There are also, inevitably, hats and other cosmetic upgrades to buy, and the game again does its best to push these in your face (or on your head) by ostentatiously giving you the first set for free and arm-twisting you through the process of installing them.

It's a shame that the designers feel the need to tout for extra revenue so shamelessly, especially given that the game itself is paid for and looks sure to net huge profits from downloads alone. But as long as we pay for these things, and as long as we refuse to countenance games that charge more than a few quid for the initial download, developers will keep including them.

Verdict

If you've never played a Cut The Rope game before, then you won't go far wrong with this one; the puzzles are neat, expertly crafted and satisfying to work out. It looks lovely, and the new medal aspect gives the puzzles a more varied depth that's fun to explore. Veterans of the series, however, should be warned not to expect anything radically new here: lots more levels, admittedly, but lots of pushy IAPs, too. And the latter point makes us wonder whether newcomers might not be better off playing one of the earlier games first. **David Price**



GAME

Dumb Ways To Die

Free

Contact

■ dumbwaystodie.com

Read more

■ tinyurl.com/oxeru85

System requirements

iOS 4.3 or later, 38.1MB RAM; Android 2.2 or later, 35MB RAM

PC ADVISOR
GOLD



We love simple and addictive games that have great artwork, and Dumb Ways to Die ticks those boxes nicely. Not only that, but it's free.

With a similar look to the iconic Mr Men, the game's characters have an unhealthy attraction to dangerous situations. Your task is to stop them meeting an untimely end and in doing so you gain points. Each life-threatening scenario represents a mini-game. As you progress, the speed and difficulty of these increases, so your reactions and skill will need to be seriously good. Once you've lost three lives it's game over.

There's a wide range of characters and mini-games for you to tackle. Score enough points and you'll unlock the brilliant music video, after which you'll be able to unlock characters for your station platform (home screen) as you hit an increasingly higher target.

Dumb Ways to Die comes with 15 mini-games, each requiring a different skill. You might, for



example, have to swat wasps off someone's face, dodge a bear, wipe the screen free of puke or remove toast from a toaster with a fork. Our favourites include flicking piranhas away from a guy doing a ridiculously funny dance (see the above screen), and holding the bullet wounds of a moose impersonator and making another chap run fast enough to put the fire on his hair out.

There's one game that's optional, which is to make a plane stay in the air. This is done by blowing into your device's microphone, so if you have

one in an awkward place or none at all for some reason, then you can switch it off.

Aside from being addictive, entertaining and humorous, Dumb Ways to Die has rail safety as its core message.

Verdict

Dumb Ways to Die combines great design, humour and a good underlying safety message into an addictive, fun and entertaining game. It's also free, so we simply can't fault it.  **Chris Martin**

PHOTO-EDITING APP

Fotor

Free

Contact

■ fotor.com

Read more

■ tinyurl.com/qajbeaz

System requirements

Windows 8 or later

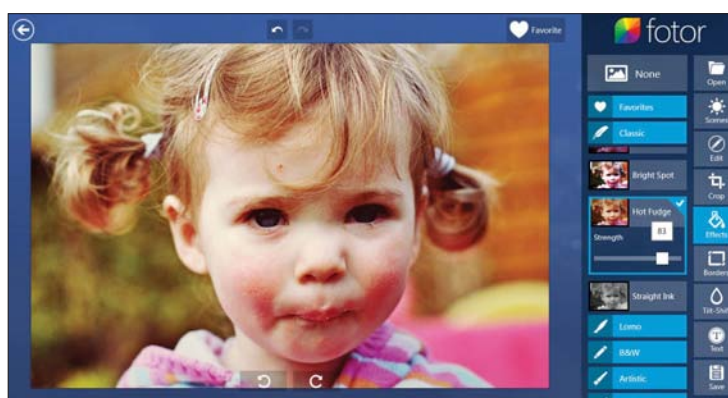
Fotor is an all-in-one photo-editing app designed for Windows 8 tablets. The interface aims to make it easy to edit your photos with a few taps and swipes. To the right is a series of buttons that can be considered the main menu.

After opening an image, tap the Scenes button to alter it with either 1-Tap Enhance or a variety of 'scene' presets such as sand/snow, night and other lighting conditions.

Next is the Edit button, which provides a range of basic adjustments, including brightness, contrast, saturation and colour temperature. Other sliders let you add a vignette or sharpen the photo. Above your image are arrows that let you undo and redo changes.

Within the Crop menu, you can straighten your photo, crop freehand or choose from a selection of common aspect ratios.

Effects is similar to Scenes, but offers a more Instagram-like selection of filters to give your photo a retro look or another style. There



are loads to choose from, but oddly no pseudo-HDR preset.


A nice touch is the inclusion of a tilt-shift effect, which can make your subject look like a miniature scene. You can select the aperture size and radius. If you want a straight blur rather than radial, you can tap on the image, and rotate and move the lines to match the foreground and background in the image.

On the odd occasion when you want to add text to an image, that's simple, too. As well as picking the font, you can increase character spacing, rotation and transparency. There's also the option of a stroke

in a different colour, but no way to change its thickness. There's no colour picker, though, so you can't match the text to a particular colour in your photo.

Other limitations include only being able to make full-image adjustments, so there's no way to increase the brightness in a particular area for example.

Verdict

Given that it's free, we can't complain too much about the lack of advanced tools. It's a huge step up from Windows 8's woeful built-in image editor.  **Jim Martin**



DVD PLAYBACK AND BACKUP SOFTWARE

Slysoft AnyDVD HD

€59 (£49)

Contact

■ slysoft.com

Read more

■ tinyurl.com/mkc96ey

System requirements

Windows XP/Vista/7/8;
2GHz processor;
512MB RAM; DVD drive

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★



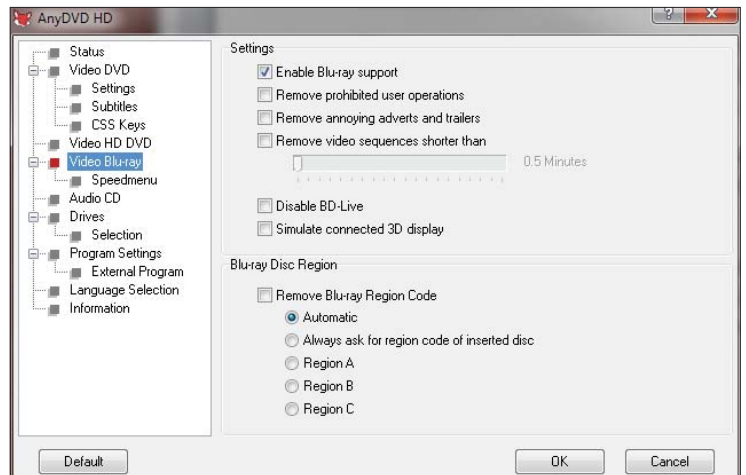
Slysoft AnyDVD HD is a program that disables copy protection and region coding, so you can play just about any DVD on a computer. What it doesn't do is copy the disc - for that you'll need a separate DVD copy application, such as Nero 2014 Platinum (tinyurl.com/o7o9wtn).

The usual caveat applies to this software, that copying a commercial movie DVD infringes the producer's intellectual property and may be an offence. There are, however, a few legitimate reasons why you might want to make a copy of a DVD.

The first is for backup, as it's not that difficult to scratch a DVD and make it unplayable. Backing up a legitimately purchased disc for your own security is a grey area, but as long as you don't sell the original or the copy you should be okay.

You may also have spent some time living abroad and have built up a collection of DVD movies from a different coding region, or may have bought a DVD as an import. If they use the NTSC video format rather than PAL, though, you'll still need an NTSC-compatible player. Most recent DVD devices can run both formats.

AnyDVD HD can help with these problems. When you first run the program, it will scan the DVD drives connected to your PC and present their essential characteristics in a small, simple control panel.



ANYDVD HD helps you make a backup of Blu-ray discs from other regions

The software is simple to use. When you load a disc into any drive, AnyDVD scans it and logs its specs, including its CSS protection status, its region coding, any autorun abilities and its bad sector protection status. It'll display these on demand. You need to set the default code region to '2' in the settings panel, for Europe. The DVD will then appear like a native disc.

The program can also handle Blu-ray and HD DVD discs. It removes DRM restrictions and region coding, and can also play them from a graphics card and on a display that isn't HDCP-compliant.

After installation, AnyDVD HD auto-starts with Windows, so any time you load a DVD, the software makes the content readable.

Verdict

AnyDVD HD makes the contents of pretty much any DVD or Blu-ray disc available to the programs you want to use with it. This means you can play commercial movies from other regions using whatever software you want and back up any DVD using an app of your choice. You should, however, use it just for security backups or to maintain access to discs you own. **Simon Williams**

WEBSITE DESIGN EDITOR

Serif WebPlus X7

PC ADVISOR
RECOMMENDED

£90 inc VAT

Contact

■ serif.com

Read more

■ tinyurl.com/kcpg8l6

System requirements

Windows XP/Vista/7/8

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★



Makers of website-design software are having an increasingly difficult time at the moment, with direct competition from offline applications and the rise in popularity of online providers, such as WordPress (tinyurl.com/a9udfn7) and Moonfruit (tinyurl.com/cxmg8n2).

WebPlus continues with its traditional front-end interface, with the page under design positioned centre screen, menus across the top, and palettes of colours and objects down the right. Drag-and-drop assets, such as buttons and menu bars, are on the left.

The design process is similar to using a desktop publishing editor and there's a wide range

of predefined templates, where you can take an existing design and change the text and pictures to complete a personalised site.

The two main improvements in the X7 version of this long-standing website designer are HTML5 compatibility and a separate 64-bit engine, said to provide faster performance. Both these upgrades are 'behind the scenes', though, so not particularly easy to appreciate.

HTML5 is the emerging de facto standard for website design, and has the advantage that it's great for creating pages that look just as good on a tablet as they do on a PC. It produces cleaner code with increased compatibility and

is designed to cope better with low-power devices. And it should obviate the need for the Adobe Flash plug-in.

There are features here that go some way beyond the enthusiast level that Serif has always aimed WebPlus at. For example, you can now set up the dynamics of slider controls on a page, though, to be honest, we don't believe many visitors will notice the difference.

Serif highlights the fact that WebPlus X7 has a one-off price of £90 with no annual subscription, that you don't need to be online to create or edit a page, and that you're free to post your site with whichever hosting provider you want.

DIGITAL IMAGE ENLARGER

Avanquest InPixio Photo Maximizer

£120 inc VAT**Contact**■ avanquest.com/uk**Read more**■ tinyurl.com/nytqrp9**System requirements**

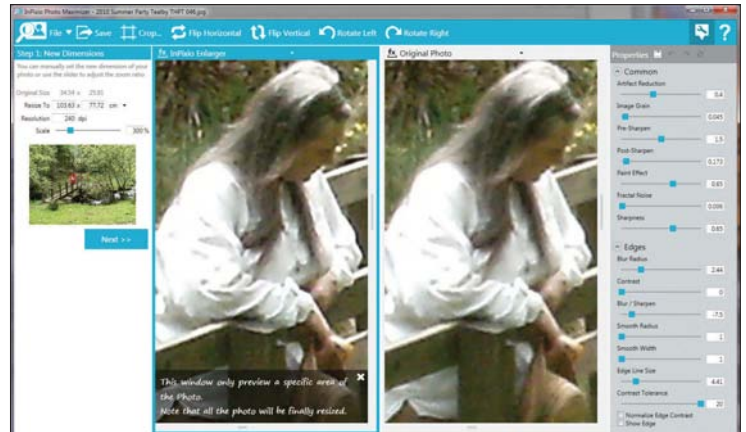
Windows XP/Vista
32-bit/7/8, 1.2GHz P4 or
equivalent processor,
2GB RAM (1GB for XP),
15MB disk space

Avanquest's InPixio Photo Maximizer aims to stop pixellation occurring when you enlarge a digital photograph. This happens because there isn't enough information in the original image to prevent the picture from breaking up into its component parts of visible, square pixels. The software uses a sophisticated algorithm to guesstimate the contents of these pixels and break them down to look more like a regular image.

It's easy to use. Load an image, select its size and resolution, and the software will show the original and the altered image side by side – although oddly with the 'After' on the left and the 'Before' on the right.

Using its default settings, you can see at a glance that pixellation is much reduced. This is particularly noticeable around clean-cut edges of objects, but the entire image is depixelated. You can view a particular part of the photo using a small marquee on a thumbnail to the left, but the whole image, not just the marked area, is enlarged.

You don't have to use the software's default settings, as there are a lot of control parameters available as sliders to the right of the After and Before panels. It's easy to see why most of these would affect the result: sharpening, grain, blur, fractal noise and contrast can



Both the **ORIGINAL** AND **ALTERED** pictures are displayed side by side

all help. Unfortunately, there's very little guidance on how to apply them, so it's down to trial and error. Once you do find a set that work well, you can save them as a preset, to apply elsewhere.


What the utility can't do is to introduce more detail into an image. It can smooth and interpolate the pixels it thinks should be there, but this blends pixels only. Even so, the result is invariably better than an enlarged image to which it hasn't been applied. It's also gives a more convincing and realistic image than using the smoothing and blur filters of the main graphic editors.

There's not much else this utility can do. You can crop and rotate an image, but it's a tool for a specific function, not an app in itself. It

might work better as a plug-in for Photoshop or Photo-Paint.

The main problem is that the enlargement algorithm, created by Mischa Lusteck, is already available in a free utility called SmillaEnlarger – available from tinyurl.com/mgwyx6. This has many of the features of InPixio Photo Maximizer, though, it's less intuitive to use.

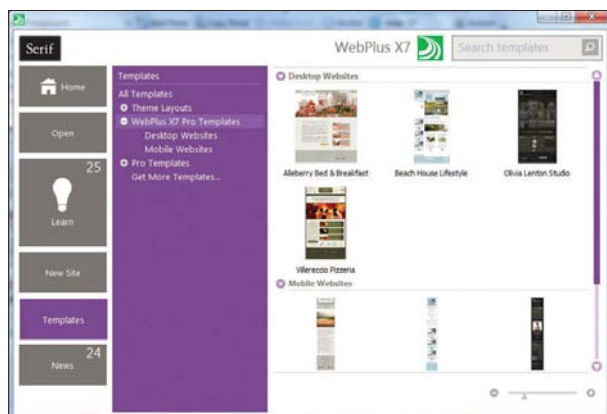
Verdict

InPixio Photo Maximizer does its job really well and if it were a £30 utility, we would probably recommend it. At £120, though, it looks very expensive, particularly when there's a free open-source alternative, using the same enlargement algorithm, which you can download for nothing.  **Simon Williams**

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★



SERIF WEBPLUS X7
has a wide range of
predefined templates

You can also use the same app to
design and maintain multiple sites,
rather than having to subscribe
separately for each one.


You'll need to balance this
against the convenience of having
your site design tied directly into
the hosting, so you can update and
edit from any device with internet
access and a web browser.

Perhaps a better play would
be to highlight the wide variety of
editing facilities and widgets that
can be applied to a site without
the need for any coding.

The new version includes
improved support for video from
YouTube, Vimeo and Flickr. There's
also WebPlus's own video player,
a drag-and-drop asset that enables
you to play MPEG-4 videos of
your own in a professional-looking
embedded application.

You can now add interactive
Google Maps to your pages, so you
can, for example, lead customers
to your premises. Commercial
assistance goes further, if you're
running a hotel or B&B, with the
Accommodation Booker. This works
from Serif's server to enable viewers
of your site to check available rooms
and to make bookings, so you don't
have to use third-party services.

Verdict

If you want more than the simple
facilities provided by online
design apps, Serif WebPlus X7
has maintained its position as the
designer of choice in the sub-£100
market.  **Simon Williams**

VIRTUALISATION SOFTWARE

VMware Fusion 6

£48 inc VAT

Contact

■ vmware.com/uk

Read more

■ tinyurl.com/LcLqp29

System requirements

OS X 10.7.0 or later; 4GB RAM; 750MB disk space

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★



WINDOWS, LINUX
and OS X guests
are supported,
with varying
degrees of success

Running Windows on a Mac is made easy by Apple, with Boot Camp built in, but for more control there's always virtualisation. Following shortly after the update to Parallels Desktop 9 for Mac (tinyurl.com/nus53bg) comes Fusion 6, another gateway to the world of other x86 operating systems.

The software adds compatibility with OS X Mavericks – as a host machine – and also Windows 8.1 as a virtual machine (VM). Mavericks support means that it'll work with the Mac's latest multiple monitor arrangements in Mission Control, which allows one window to be static while a second monitor can rotate through various virtual desktops.

And in Unity mode (for Windows only), where you lose the Microsoft Windows interface and keep just its windows, program windows also sit easily with native Mac ones when you need to shuffle them with Mission Control. When moving between full-screen desktops, a useful name overlay appears at the top of the screen to show the name of the virtual machine in use.

VMware has perhaps the most approachable interface of all available virtualisation applications. The Virtual Machine Library, for example, gives an overview of all installed VMs, by default in list view.

The Settings pane for each VM is clearly laid out. Three rows of icons cleanly show the way to make essential adjustments, such as Sharing and Network Adapter.



VMWARE FUSION 6 lets you adjust each virtual machine's parameters

VMware's support of OS X guests is limited. Most infuriating is the absence of acceleration of onscreen graphics to render the interface correctly. Certain Mavericks apps such as Maps don't work at all, and the Mac interface, virtualised on a Mac, has a jittery motion.

On the plus side, whereas Parallels is restricted to eight virtual CPU cores and 16GB memory, Fusion 6 allows 16 CPUs and 64GB memory to be pressed into service.

Again OS X guests are the poor relation here – we found that a Mac virtual machine would report two processors and 2GB memory, even after setting more resources in the VM's settings. Fusion 6 does better with Linux guests, or at least with Ubuntu up to and including the

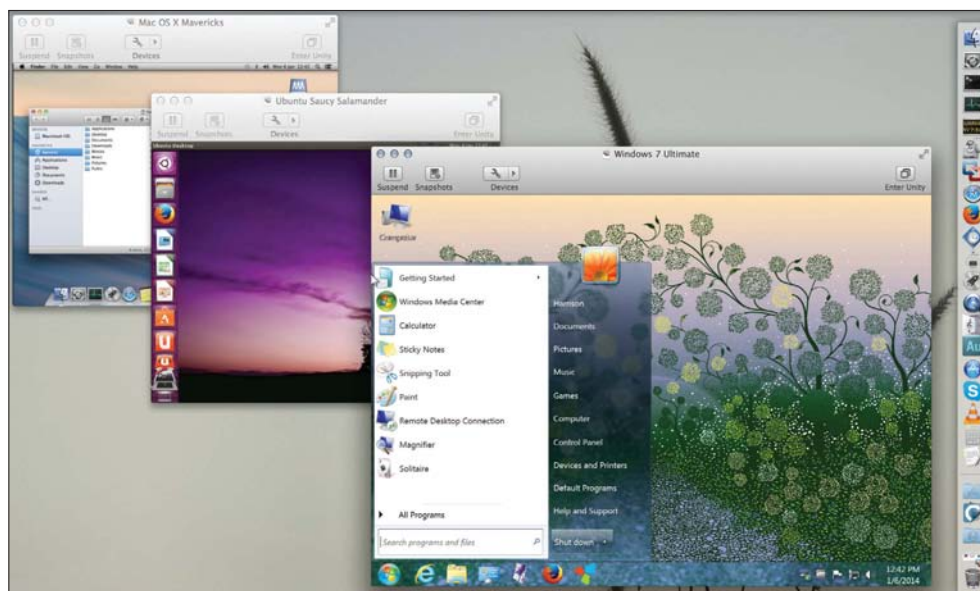
latest Saucy Salamander version of October 2013. Here we saw full accelerated graphics support to give a smooth interface.

We ran Windows benchmark utilities to compare its speed with Fusion 5 (tinyurl.com/lwtdevx), and also against the latest Parallels Desktop 9. Testing was conducted on a 15in Apple MacBook Pro (late 2012) using Windows 7 Ultimate 64-bit SP1 configured with two virtual processor cores and 2GB memory. There's still no adjustment for the amount of video memory available to a VM, and graphics support is limited to DirectX 9.0EX in Windows (OpenGL 1.2 for Linux).

Raw memory and processor speed were almost the same for both versions of Fusion according to Geekbench 3 for Windows, which averaged 2914 and 2906 points for single-core mode in Fusion 5 and 6 respectively. Multi-core testing mode with two virtual cores enabled averaged 5266 and 5268 points here. Parallels 8 scored higher here at 2974/5350 points; Parallels 9 was unable to run the Geekbench 3 benchmark. In our Windows game test with Stalker: Call of Pripyat, Fusion 6 averaged 61fps (1024x768, medium), a small step up from Fusion 5's 57fps – and well ahead of Parallels 9 and its 38fps.

Verdict

VMware Fusion 6 may not have some of the extras found in Parallels 9, but it's still a powerful and easy-to-use choice. **Andrew Harrison**



GAME

Risk of Rain

£6 inc VAT**Contact**■ riskofraingame.com**Read more**■ tinyurl.com/ntx3vg4**System requirements**

Windows XP, Vista, 7;
2.5GHz processor; DirectX
9.0c compatible card; 1GB
RAM; 130MB disk space;
Microsoft Xbox 360
controller or direct input
compatible controller

PC ADVISOR
RECOMMENDED



Our hero has to **FIND AND ACTIVATE** a series of teleporters to escape the planet

A superficial glance at last year's gaming headlines might suggest that 2013 was the year of new consoles. Not a bit of it - the big gaming shift was a resurgence of roguelikes and their offspring - games based around the concept (and terror/thrill) of permanent character death. The sudden and total loss of all your progress and items, leaving you with only what you've learned from the experience.

Spelunky (tinyurl.com/ovzdg2c), perhaps the poster boy, has enjoyed acclaim on most of the major platforms over the past couple of years. But while that's more about the avoidance of danger, Risk of Rain applies a similar concept and ethos to run 'n' gun games such as Metal Slug and Contra.

Hostile world

You play as a little dude (optionally joined by up to three other little dudes in co-op mode), who has crash-landed on an exceptionally hostile alien world, trying to find and activate a series of teleporters in order to escape.

The more you tarry in this - and thanks to fiendish, platform and rope ladder-based level layouts, tarrying is inevitable - the more monsters will arrive and try to take your life. Once the timer hits certain points, the number and frequency of enemies will rise sharply. Your wee chap will be almost overrun by foes, in contrast to the nonchalant jumping and occasional foes at the start of the level. Your primary means of



You'll need to fight off increasingly fiendish foes to survive **RISK OF RAIN**

dealing with this rapid escalation of monsters - most of which require subtly or significantly different tactics to defeat - is a laser gun, but Risk of Rain quickly wanders into Diablo-with-guns territory.

A raft of upgradeable skills with specific tactical purposes and a random smattering of better weapons to find and buy is necessary to keep on top of the threat. If you can stay alive for long enough, you'll realise you're now able to deal with quantities of enemies that would have spelled instant doom not so long ago.

Finding your rhythm


It's enormously stressful, but peppered with moments of zen-like skill. Find the game's rhythm and everything changes. Fall off that rhythm and you'll be dead within moments. Having friends join you changes the dynamic quite a bit

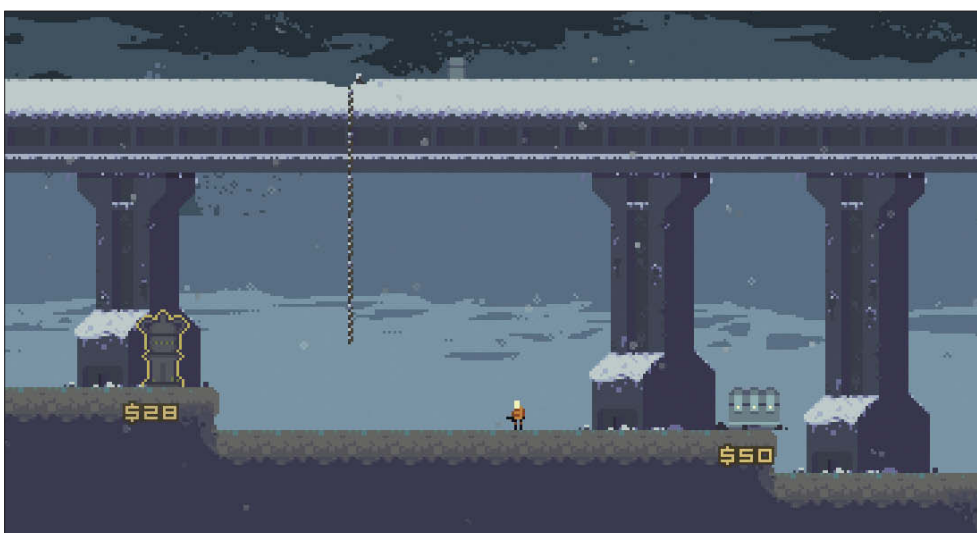
- more a party of carnage than a devout test of your own ability - but it's great that both modes are equally viable.

Despite its apparent random levels, Risk of Rain has a fixed structure and can be completed in a surprisingly short space of time. Getting to the point where you can achieve that involves an awful lot of failure and repetition, but that's okay. That's part of the fun. Humiliating defeats can cause as many cackles as they do obscenities, and most importantly you're ambly learning from each one. How that enemy moves, how to dodge that massive worm thing, what that gun does, and most of all the delicate balance of getting a wriggle on or playing for time so you can Hoover up as much cash and experience as possible.

Sadly, it's a rickety-feeling game. The slickness of its mechanics aren't quite matched by its appearance or controls, and it's perhaps a little too aloof when it comes to explaining how it works. You'll figure it out quickly enough, but first encounters will feel cold and confusing. Despite rudimentary mouse and keyboard controls, a gamepad is a necessity if you're to even begin to master the game, so keep that in mind.

Verdict

Risk Of Rain might look a little rough and ready, but it's got it where it counts. Smart, challenging and tactical, but with all the instant cheer of a 1990s run 'n' gun game.  **Alec Meer**



GAME

Lego Marvels Super Heroes

£18 inc VAT

Contact

■ ttgames.com

Read more

■ tinyurl.com/ohgwuq3

System requirements

Windows XP SP3, Vista/7/8 with latest service packs and updates installed; AMD Athlon 64 X2 EE 3800+ or similar Intel CPU, such as Intel Pentium Dual Core E2180; nVidia GeForce 7600 GS or ATI Radeon X1950 Pro or better; DirectX 10; broadband internet connection; 2GB RAM; 7GB disk space

PC ADVISOR
RECOMMENDED



There's a huge cast of **SUPER-VILLAINS** for you to take on

With TT Games now having made both Lego Batman (tinyurl.com/coqnopr) and now Lego Marvel games, it's hard not to dream of a DC vs Marvel megamix further down the line. But fantasies of blocky Superman clobbering bricky Spider-Man will have to wait for another day - for now, there's an absurd amount to enjoy in Marvel Super Heroes.

It takes many of its cues from the recent *Avengers* movies and cast of superdudes, but is more than happy to spin off into lesser-known aspects of the very heavily populated Marvel comics universe. And unlike Hollywood, rights for the likes of X-Men and Spider-Man aren't locked into different companies, which means Marvel Super Heroes can offer up all the Wolverine and Captain America or Fantastic Four and Hulk dream teams a fan could wish for.

The game isn't simply a parade of who's who superheroes, though: it's also perhaps the Lego series' finest hour in terms of both scope and spectacle. On paper, it's doing exactly the same thing as the other games to date - a mixture of platforming, puzzling, punching and building/destroying Lego structures in a gag-packed, affectionately satirical take on its iconic pop cultural subject matter. Lego Marvel manages to amp everything up impressively, though. While some of its predecessors have been guilty of mere repetition, this works extremely hard to up the entertainment factor.

Much of this stems from silly-but-grand interpretations of the



LEGO MARVEL SUPER HEROES lets you team up your favourite heroes

superheroes' powers - Hulk can smash everything, Mr Fantastic can transform into a giant teapot or screwdriver, that sort of thing. While the 'story' is split into missions, between them an open-world New York offers a destructible, cheerful playground of sidequest-packed cartoon mayhem to tour any character of your choice through.

Beautiful to behold

And while this might be an unlikely touchstone for the potential of next-generation games, a PlayStation 4, Xbox One or decent computer sees the game pulling off genuinely incredible, sometimes even beautiful sights you mightn't have imagined Lego could do. Colossal, whirling clouds of Lego studs, collapsing skyscrapers and enormous bosses, and all happening at a breakneck

pace thanks to the vast collection of playable Marvel characters on offer.

There's an awful lot to do, but also an awful lot to get to grips with. There is an argument to be made that it's a bit much, especially for the child audience the game partially courts, and the game's tendency to repeat some tips ad nauseam but fail to mention others entirely doesn't help. This isn't the casual fare the series once was, but it's well worth persevering with the more obtuse aspects, especially if you're playing it in two-player mode with a nipper.

It's a shame that the basic platforming remains the same as it was though, with camera limitations and fiddliness getting in the way of I-can-do-anything joy of the game as a whole. It might be the Lego games' finest hour yet, but there's no escaping that it's a case of building more and more on top of ancient foundations, rather than remaking anything from the ground up.

The structure is no danger of collapsing yet, though, as a steady stream of visual ingenuity, celebration and tongue-in-cheek mockery means only the most curmudgeonly party pooper would stop to gripe for long.

Verdict

You could accuse Marvel Super Heroes of being the same as the LEGO games ever were, but that would be to ignore the fact that it's bigger, better and more beautiful than its predecessors. **Alec Meer**



£5,482 ex VAT
£6,579 inc VAT
From £2,082 ex VAT

Contact

■ apple.com/uk
 Read more
 ■ tinyurl.com/p9xhg5g

Specification

3GHz Intel Xeon E5-1628 v2 (8-core, 10MB L3 cache); 64GB 1867MHz DDR3 ECC memory; 1TB PCIe SSD; 2x AMD FirePower D700 graphics cards with 6GB GDDR5 memory each; 6x Thunderbolt 2; 4x USB 3.0; 1x HDMI 1.4; 3.5mm analogue audio output with Toslink optical digital; 3.5mm combo headset jack; backlit port panel; 802.11ac with 3x3 MIMO; Bluetooth 4.0; 450W internal power supply; 167x251mm; 5kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



DESKTOP PC

Apple Mac Pro

Split personality could aptly describe the Mac Pro. On the one hand it's a stout metallic drum, resembling blued steel and as serious as a Smith & Wesson six-shooter. That dark metallic finish is extremely reflective and, as you walk around, so its shape and lustre changes with everything it's reflecting. Its other persona is even more serious.

Slide the thumbcatch at the rear and the cover is unlocked. You then raise the weighty cylinder outer to reveal the real ordinance inside.

With two stuffed electronic circuit boards and hints of plenty more precision components surface-mounted all over, this could be an aerospace-built payload designed for space launches.

Build and design

The Mac Pro stands 251mm tall – little more than the height of an iPad. And with a diameter of 167mm it has similar proportions to a can of Pepsi, only around twice as high.

At its heart is a central cooling core with a finned triangular-section heatsink, and three facets that run the height of the casework – two are high-power AMD FirePower professional graphics cards, the third is the main logic board.

Cooling is a challenge for any performance PC. Apple has opted for a large turbine-like finned rotor that sits at the top of the chassis, drawing in air through a series of vents on the base.

Cool air passes up the central heatsinked assembly and warm air drifts out through the chimney-like aperture at the top. Even at a slow revolution the large fan can move plenty of air, which results in near-inaudible operation – just 12 dBA when idling, according to Apple.

During our testing the Mac Pro was mostly seen but not heard, although a slew of software updates warmed the machine to 30 dBA.

Silicon specs

For central processing power the Mac Pro takes an Intel Xeon E5 processor with four-, six-, eight- or 12 cores. This chip is the workstation-class version of last year's Intel Core-series Ivy Bridge processor, and is otherwise known as Ivy Bridge Extreme.



PC ADVISOR
GOLD

Depending on its configuration, the Mac Pro will be clocked between 3.7GHz for the entry-level quad-core machine, and 2.7GHz per core for the 12-core version.

This 22nm-process silicon chip can dynamically overclock to a higher clock speed on demand. It also supports Hyper-Threading, letting the OS and most software 'see' the processor with twice the number of physical cores.

The Mac Pro takes fast 1867MHz RAM, exactly the type of fault-tolerant error checking and correcting (ECC) memory we'd expect of a professional workstation. Four slots are available, pre-filled with a complement between 12- (3x 4GB) and 64GB (4x 16GB).

Unlike many modern workstations the 2013 Mac Pro runs a solitary CPU. But performance computing is no longer all about CPU cores and gigahertz speed. The graphics processor with its many, many cores running at not-much-slower speeds is now a computing tool to be reckoned with. Which explains Apple's investment in the graphics with two independent AMD FirePower D-series cards.

Through the recoding of key application software, some of the heavy lifting undertaken by the CPU can now be diverted to the GPU, and its massively parallel architecture is much more efficient at processing assorted productivity tasks. Graphics encoding and decoding, cryptographic routines and signal processing can all be handled by the right combination of hardware stream processors and

a suitable API – Apple founded and is supporting perhaps the most important right now in OpenCL.

The Mac Pro uses solid-state flash for storage. Like the latest MacBook Air and Retina MacBook Pro, it throws out the data-throttling SATA controller and puts fast flash chips more directly in touch with the PCI Express bus. You can have either 256GB-, 512GB- or 1TB.

Assorted I/O runs to three Intel Thunderbolt controllers, six Thunderbolt 2 ports and one HDMI 1.4 video port. There are four USB 3.0, while built-in audio connectivity comes in two 3.5mm mini-jacks: one a combined stereo analogue line-out with Toslink digital audio output; the other a headset jack and a mic.

Helping keep down the cable count are the two latest wireless data standards: 802.11ac Wi-Fi with a three-antenna array, and low-power Bluetooth 4.0.

Benchmark results

Our review sample is an eight-core Mac Pro with an Intel Xeon E5-1680 v2 running at 3GHz, maxed out with 64GB of memory and a 1TB SSD. This unit has twin AMD FirePower D700 graphics cards, each with 2048 stream processors, 6GB of GDDR5 memory and a 384-bit-wide memory bus. This configuration will set you back £5,482 ex VAT.

In storage performance the Mac Pro showed the benefit of its PCI Express 2.0-connected flash. Random reads from 4- to 1024kB averaged 241MB/s, while similar random writes soared to 441MB/s. Those numbers indicated that for

general tasks operation should feel exceptionally fast and fluid.

There may be up to 1TB of onboard storage but, after this, you're reliant on external drives – potentially Thunderbolt-based, since USB 3.0 will not deliver the throughput some video pros will demand.

Sequential transfers of large files sped by the fastest, averaging 1027MB/s when writing and 1220MB/s for reading, using data files 2- to 10MB in size.

We don't have previous Mac Pro benchmarks with which to compare this new model's performance, and will instead look to the top-end Retina MacBook Pro. However, you should note that while a laptop can hit high speeds, especially briefly with the help of short-term Turbo

overclocking, a desktop should be able to run at full-pelt all day.

In Cinebench 11.5, the 3GHz Mac Pro scored 1.55 points with a single core. 2012's best Retina MacBook Pro (2.6GHz), with its same-generation Ivy Bridge chip, hit 1.45 points. 2013's top MacBook model pipped that by a hundredth, at 1.46 points, even with a 2.3GHz chip.

Multi-threading is the game, though, and with eight real cores driving 16 virtualised threads, the Mac Pro hit 13.69 points in multimode, against 6.78- and 6.82 points for the respective finest Apple notebooks of 2012 and 2013.

In Cinebench R15 test the Mac Pro scored 138 points with a single core, while the Retina MacBooks managed 127- and 126 points. With all cores these numbers crept up to 609- and 623 points for the portables, and 1225 points for the workstation Mac Pro.

It's worth pointing out that Apple also has Boot Camp drivers available to facilitate installing Windows on


the Mac Pro. Used thus, it should even be possible to engage a CrossFire mode to combine the two graphics cards.

In Geekbench 3 the Mac Pro managed 'just' 3628 points on a single core, rising to 26,086 in multicore mode. For comparison, the best 2013 Retina MacBook reaped 3461 points from its more efficient Haswell chip, but 'only' 3,571 in multicore mode.

Upgrade potential

Some professionals will mourn the loss of upgradeable components, chiefly on the PCI expansion and storage side. Most expansion and upgrades must come purely in the form of external boxes and drives, connected via Thunderbolt.

Verdict

Quiet and cool, Apple has pulled off the thermal challenge of a computing powerhouse. The 2013 Mac Pro is an exceptionally capable machine.  **Andrew Harrison**



£370 ex VAT
£445 inc VAT

Contact

■ dell.co.uk
Read more
■ tinyurl.com/pbdbxgx

Specification

Multifunction colour laser printer; 1GB standard memory; 600x600dpi max printing resolution; processor speed 1066MHz; 27ppm specified speed; auto-duplex printing; 400-sheet standard input capacity; 950-sheet maximum input capacity; 50-sheet ADF; 10/100 ethernet, USB 2.0, optional Wi-Fi b/g/n; 439x530x558mm; 32.6kg

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



COLOUR MULTIFUNCTION LASER PRINTER

Dell C2665dnf

It's been almost two years since we looked at Dell's previous multifunction colour laser printer – the C3765dnf (tinyurl.com/dxvawrg) – and now comes the C2665dnf with some surprising new features.

Initially you wouldn't notice too many physical differences between the two machines as they have identical dimensions: a matt black, square-shaped 558x439x530mm weighing in at a solid 32.6kg.

You still have the full MFP set of print, copy, fax and scan, with the same 50-sheet Duplex Automatic Document Feeder at the summit, the 150-sheet multipurpose tray at the front and the basic 250-sheet input tray at the base.

So where are the innovations? For a start, the memory and processor capacity has been doubled to 1GB and 1066MHz, and the 4.3in touchscreen display has had an overhaul with swipe gestures included and colours brightened.

However, the unique selling point for the C2665dnf is its integration

with the Dell Document Hub, which enables you to simultaneously access and search multiple cloud storage services, as well as print Microsoft Office and Google documents.

On the far right of the control panel is an NFC logo that lets you tap to print from compatible smartphones and tablets. The C2665dnf is AirPrint-compatible, too, and a USB port below the control panel lets you save to flash drives.

Print speeds are not at the dizzying levels of the C3765dnf but the C2665dnf is certainly no slouch. The claimed 27ppm for both colour and text pages proved accurate, with duplex versions managing a more than respectable 16ppm.

Also impressive was the degree of accuracy and fine definition in copies of colour images and illustrations. Colour photos, on the other hand, delivered warmer tones than the original and copies



emerged paler with occasional banding issues.

The three-colour cartridges can be purchased in 1200- (4.9p/page) or 4000-page (3.6p) sizes, while the black ink comes in 3000- (2.6p) and 6000-page (2.1p) options.

Verdict

The Dell C2665dnf shows significant improvements over its predecessor, with the addition of Document Hub access and NFC compatibility.

 **Martyn Clayden**

£66 ex VAT
£80 inc VAT

Contact

■ canon.co.uk
Read more
■ tinyurl.com/lkwljde

Specification

Colour inkjet multifunction; Max print resolution 4800x1200dpi; Quoted print speed B=12.2ppm C=8.7ppm; Actual print speed B=11.8ppm C=5.1ppm; 1200x2400dpi optical scanner; copier; no fax; USB 2.0; 802.11b/g/n, mobile devices, cloud; 2.5in display; 100-sheet input; Auto duplex; 455x369x148mm; 6.3kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆



ALL-IN-ONE INKJET PRINTER

Canon Pixma MG5550

PC ADVISOR
RECOMMENDED

This MG5550 MFD offers print-, scan- and copy facilities, and its curved edges and low 148mm design cut an attractive figure. Not as pleasing is the long output tray that stretches out rather further than we'd ideally like.

The control system is simplistic, and these Pixmas have yet to fully embrace touch sensitivity. Instead, you navigate using three select buttons placed underneath the relevant onscreen options, with the occasional need to move across to a separate directional pad. It's the need to alternate between the central three-button system and the directional pad that can make negotiating the MG5550's many options a little less intuitive than it ought to be. The system works well for the most part, but we do think that Canon could do away with some of the buttons for a better experience overall. The 2.5in screen is adequate, if hardly the largest we've seen.

Connectivity options are generally good. There's no support for memory cards, but the Canon works smoothly with tablets and smartphones, and can be hooked up to the cloud using services such as Dropbox, Flickr and Evernote. There's no ethernet, but wireless 802.11b/g/n support is implemented.

At first glance, the printing performance may not seem very impressive. These days, 11.8 pages per minute (ppm) isn't amazing,



even for an inkjet. However, what's rather more impressive is that once you leave behind the fastest mode, and switch to the middle settings, the Pixma keeps up a figure of 11.1ppm.

Sharp prints

The output is wonderfully sharp, with immaculately defined text. Canon's colour printing has long been considered the best overall, and it gives more hints here, with its medium 3.6ppm mode producing a particularly exciting mix of clarity and depth. We couldn't see any defects in the finished prints, and even skin tones were wonderfully captured.

The Canon can also handle auto-duplexing. Admittedly, it's not the fastest, and the 53.4 percent fall in performance will likely see it consigned to occasional use, if that.

For printing overall, though, the MG5550 is excellent at the price.

Scanning is fairly solid, too. The highly adaptable lid can take a good variety of source material, and we were able to scan A4 images in 11-, 15- and 46 seconds, at 150-, 300- and 600dpi respectively. These aren't fantastic times, but they're adequate. More to the point, the scans are well rendered, with lines captured perfectly, and the colour replicated with good fidelity.

The Canon adds to the overall package with a strong selection of inks. You have to use five in all. Three are colour tanks, but two different types of black tank are used. It's partly this variation that allows the MFD to achieve such impeccable black text and shading. The standard black tank has a very high 5565-page yield in its XL form. For print costs, though, we've stuck more with the still very pleasing 2.4p per page that the pigment black tank will cost you. Colour, at 4.8p a page, is very much in line with other printers.

Verdict

The Canon MG5550 isn't the best-featured or -designed MFD we've seen. However, once you strip away the rarely used fastest mode, the Pixma offers excellent speed and quality. As performance goes, this is the number-one sub-£100 model on the market. As such, it's perilously close to winning our Gold award.

✉ Robin Morris



At Misco, we're committed to helping small and medium-sized businesses maximise their budgets while boosting the output of their workforce, by bringing you great deals on the latest IT from leading manufacturers.

With support for Windows XP ending on April 8th, 2014, there's never been a better time to refresh your old systems and maximise your productivity. And the benefits aren't just limited to PCs and laptops - you can also benefit from new printing technology, accessories and components that will help your employees work smarter.

Check out the hand-picked selection below including trade-in, cashback and warranty offers, or visit misco.co.uk/smb for more great tech deals.



HELPING SMBs TO WORK SMARTER

Light Design that's Packed with Style

HP ProBook 450 G1 Laptop

- Intel® Core™ i5-4200 processor with Intel® Turbo Boost Technology 2.0
- 4GB RAM / 500GB hard drive
- 15.6" LED-backlit HD anti-glare display
- DVD+/-RW SuperMulti DL
- Fingerprint reader
- Spill-resistant keyboard
- Windows 7 Professional pre-installed + Windows 8 Pro media and license

UP TO
£200
TRADE IN*



Order: ABQ632990

£529.99
Ex VAT

Support for Windows XP ends April 8, 2014
Upgrade your systems today

 **Windows 8 Pro**



PERFORMANCE
& RELIABILITY
PROMISE²

EXCLUSIVE
£65
CASHBACK*

1. Lenovo ThinkPad Edge E530c Laptop + 3 Year Onsite NBD Warranty

- Intel® Core™ i3-3120M (2.5GHz) processor
- 4GB RAM / 500GB hard drive
- 15.6" LED-backlit HD anti-glare display
- DVD-Writer
- Windows 7 Professional + Windows 8 Pro RDVD/ COA
- 3 year onsite NBD warranty.

lenovo FOR
THOSE
WHO DO.

Order: AB220609
£345.82
Ex VAT
AFTER CASHBACK*

2. Acer Veriton X2611 Small Form Factor PC + 3 Year Onsite Warranty

- Intel® Core™ i5-3330 (3.20GHz) processor
- 4GB RAM / 500GB hard drive
- DVD±RW / DVD-RAM
- Intel® HD Graphics 2500
- Windows 7 Professional / Windows 8 Pro
- 3 year onsite warranty.

acer

Order: AB216681
£349.99
Ex VAT

3. Canon i-SENSYS LBP7100Cn Printer + Easy Service Pack

- Print speeds up to 14ppm mono & colour
- 30k monthly duty cycle
- Up to 1200 x 1200 dpi resolution
- 150-sheet max paper capacity
- Wi-Fi connectivity for easy sharing.

Canon

Order: AB217867
£102.99
Ex VAT

4. Ricoh SPC242SF Colour Laser All-in-One Printer

- Copy, print, scan and fax
- Up to 20ppm / 20cpm print / copy speeds
- Scanning speeds of less than 10 seconds / 5 seconds colour / B&W
- Fast warm-up time
- Energy-saving power consumption.

RICOH

Order: ABQ493001
£341.66
Ex VAT

5. Kensington USB 3.0 Single Dock

- Turn one USB port into six - gain access to multiple peripherals
- Faster network & Internet access with Gigabit Ethernet connection
- Run high-quality 1080p HD videos
- Compatible with USB 3.0 & 2.0
- Quick one-touch USB connection for hassle-free setup.

Kensington

Order: AB198613
£111.66
Ex VAT

6. SanDisk X210 128GB 2.5" SATA Solid State Drive

- 128GB capacity
- Built for durability and reliability
- Faster boot, file transfer and application load times
- Extend the lifespan of existing notebooks or PCs
- Increase battery life of notebooks.

SanDisk

Order: AB199734
£87.49
Ex VAT

Gaming PCs

While most people are deserting the bulky desktop PC in favour of laptops and tablets, high-end gaming is one area where you can't beat a desktop PC for performance balanced with price. Paul Monckton tests six of the best

Desktop PCs come in a variety of shapes and sizes. Larger cases allow for bigger and multiple graphics cards; arrays of hard drives; elaborate cooling systems and the biggest, most feature-rich motherboards. But traditional PCs can take up a huge amount of space and really dominate a small room.

We're seeing greater numbers of more compact PCs, featuring smaller Mini-ITX and Micro-ATX motherboards. These fit into rather more manageable case dimensions. They aren't for real power users or people who want to double-up on graphics cards or install a large number of internal components, although they can nearly as powerful as their much larger counterparts.

Graphics card

Inside the case, the next most important choice to make will be your graphics card. The largest cards may not fit in all system cases, but in general you should go for the most powerful graphics card you can afford as this component is the driving force behind gaming performance.

There's an ongoing battle between AMD and nVidia when it comes to graphics card selection, with price changes, new architectures and new driver releases often tipping the balance back and forth between the two. Today, AMD's R9 280X or the faster R9 290 will give you a great gaming experience, and even the

slower of these delivers over 60fps at 1920x1080 pixels in many cases. Similarly, nVidia's GeForce GTX 780 is a force to be reckoned with, often delivering slightly higher framerates in our tests, although your experience will depend on precisely which games you play. And software optimisations in the games themselves can tip performance in favour of one or the other brand.

Never skimp on the graphics card in a gaming PC – it's the single most expensive component, but is essential for the best Windows gaming. Don't be afraid to opt for a slightly slower processor if it means you can afford a better graphics card. In general, you'll need to match the performance of the two components to avoid bottlenecks and to get the most out of both.

You can save money with a factory-overclocked graphics card with a lower base specification. These run the graphics processing chips and memory marginally faster than standard cards and use superior cooling systems. The result often provides graphics performance closer to that of the next model up, but at a lower price.

Dual-card solutions can also be a good idea, depending on the prices of the cards available at any given time. None of the vendors here has chosen such a solution but, if you choose a motherboard that supports nVidia's SLI or AMD's CrossFireX, it's easy to add a second graphics card later

– provided your case has room and your power supply can handle the extra demand.

Processor

The graphics processor may drive the Windows gaming experience, but a PC still needs a central processor. The new Intel Core i5-4670K is difficult to beat for all-round performance at a reasonable price. You can opt for the supreme power of the more expensive Core i7-4770K, which can process double the number of threads, but you'll pay a considerable premium – and crucially, see minimal improvement in gaming framerates.

Any of these 'K-series' processors will allow a reasonable amount of overclocking, but make sure your system uses a motherboard that supports this function if you want to make the most of such a CPU.

We use PCMark 7 to quantify the general performance of each machine. When most PC vendors are selling in essence the same box of bits, differences can be attributed to the level of overclocking and the use of faster memory or choice of SSD. Graphics cards can also come into play for non-gaming tasks such as converting video formats, which will also be reflected in the overall PCMark 7 score.

Good cooling is essential if a high-performance CPU is not to overheat. The cheap Intel CPU cooler often fitted to family PCs won't do. Expect to find large heatsinks



Photography by Dominik Tomaszewski

and several fans. Liquid-cooling systems offer reduced fan noise and greater cooling capacity than airflow alone. Meanwhile, the dust filters attached to a computer's fans can help to reduce the incoming debris that clogs up games machines and can otherwise cause them to run even hotter and louder.

Gamers like their systems to look the part, but the case needs to be practical. Internal cable management aids airflow, and fan controllers let you reduce noise or boost cooling as necessary.

Peripherals

Look for a monitor that's large, clear and offers a fast response time. Twisted nematic (TN) panels offer the fastest response times,

but in-plane switching (IPS) panels are now sufficiently fast and provide much better colour reproduction. Their wider viewing angles will benefit other (non-gaming) users of the PC, too.

Console gamers may want a display that has multiple HDMI inputs so they can hook it up to their PC and switch between the two.

The keyboard and mouse you use can also make a huge difference to your gaming performance. An enthusiast system should come with peripherals designed for gaming. You may benefit from the improved responsiveness of wired rather than wireless devices. Look for high-resolution mice, and keyboards with programmable keys and backlighting.

High-grade mechanical switches in keyboards have a better 'feel' and provide longer life than cheap membrane switches. Some draw attention to the W, A, S, D keys with a different colour or texture.

A gaming sound card can provide a more immersive experience by adding multiple sound effects, with improved audio fidelity and reduced noise. Also consider a gaming headset with a built-in mic.

Warranty

Warranty terms are crucial when it comes to PCs with processors pushed beyond their rated speed. The longer the warranty better, but also look for parts-and-labour cover rather than sneaky labour-only deals.

ARIA FX-VIPER 8320

£895 inc VAT • aria.co.uk • tinyurl.com/ogao57m

If you're in search of a bargain, then look no further than Aria's FX-Viper 8320. As the only PC in this roundup powered by an AMD processor, it costs significantly less than any other. The £895 price tag covers only the main system unit, but factor in the price of a decent monitor, keyboard and mouse, and it's still the least expensive.

Housed in an imposing black Sharkoon Bulldozer mid-tower sized ATX case, the Aria PC has a chunky, industrial look, enhanced with dramatic blue internal lighting. The blue theme continues inside, with a striking blue motherboard mounting plate and blue blanking plates at the rear. Four front-facing USB ports are provided, two of which are USB 3.0. The eight-core AMD FX-8320 processor has been overclocked from 3.5GHz up to 4.4GHz but, sadly, its application performance can't match up to the speed of any overclocked Intel-based competition. Still, a PCMark 7 score of 5219 is respectable.

Gaming performance is delivered by a Sapphire AMD Radeon R9 280X Vapor-X OC graphics card. This is a slightly overclocked version of the stock R9 280X featuring a large, quiet vapour-chamber cooling unit with dual fans. Frametimes from this system were rather lower than average, but when gaming at a resolution of 1920x1080 pixels, you'll still be able to exceed the magic 60fps in most games at high quality. This is plenty of performance for the majority of gamers.

The system incorporates a 600W Corsair CX600M power supply, which we feel is somewhat insufficient for this AMD-based system. When running at full load, we measured a power draw of a massive

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



657W, which exceeds the specification of the PSU, although it should be noted that the PC ran without problems.

Storage is provided by a 2TB Seagate hard drive, complemented by a 120GB Samsung 840 EVO SSD for improved performance.

VERDICT: The Aria FX-Viper 8320 is reasonably priced, but you'll have to factor in the cost of a monitor, keyboard and mouse. Performance is lower than most of the competition, but gaming framerates are fast enough for smooth graphics at high resolutions and quality settings.

CHILLBLAST FUSION PROBE

£1,299 inc VAT • chillblast.com • tinyurl.com/owq24qq

Chillblast's Fusion Probe is one of three 'compact' desktop PCs in this month's group test. Our review sample is housed in a white Aerocool DS Gaming Cube case, which lends it a minimalist, yet stylish appearance. Measuring only 230x502x507mm, it's significantly smaller than a standard ATX case. Its reduced size also requires a smaller motherboard, and in this case it's a Mini ITX form factor GA-Z87N-WIFI from Gigabyte. As its name suggests, it comes with built-in Wi-Fi as well as Bluetooth capabilities.

Chillblast has installed a quad-core 3.4GHz Intel Core i5-4670K, which has been overclocked to 4.4GHz, helping the Fusion Probe to deliver the fastest PCMark 7 score of 6965. A 2TB Toshiba hard drive is included, complemented by a 120GB Samsung 840 EVO SSD.

While great application performance is useful, these PCs are all about gaming and Chillblast has included a Palit Jetstream GeForce GTX 780 graphics card. This factory-overclocked card is the fastest nVidia-based card of the group and it delivered the highest frame rates at the highest quality settings.

Unlike the rather cramped case of Wired2Fire's rather smaller Diablo GTX-M system, the Fusion probe seems almost impossibly tidy inside and all components are much easier to access. Chillblast hasn't included an optical drive with this system, but if you need one you can order a DVD burner for £14 or a Blu-ray combo drive for £39.

A 23in Iiyama X2377HDS monitor is included, which features a high-quality IPS panel on a standard 1920x1080-pixel resolution.

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



PC ADVISOR
BEST BUY

It may not look as stylish as the AOC models included with other systems, but the picture quality is certainly good. You also get a Gigabyte Force K3 gaming keyboard and M6800 gaming mouse, both of which are popular selections although the mouse is a slightly less expensive model.

VERDICT: With its sleek, compact case, the Fusion Probe is an attractive and practical PC. It delivers the best overall application performance and comes with the most powerful graphics card.

CYBERPOWER INFINITY PERSEUS XT

£1,499 inc VAT • cyberpowersystem.co.uk • tinyurl.com/nkwn7v4

The Infinity Perseus XT is a traditional big black box of a PC, housed in the latest Mk III version of CoolerMaster's Dominator 690 mid-tower case. There's plenty of room for upgrades inside and it offers adjustable drive bays that can switch between 3.5- and 2.5in sizes without tools. It also incorporates multiple dust filters to maintain excellent airflow. Although rather large and imposing, it's much easier to access internal components in a case such as this than in one of the compact Mini ITX form factor cases. You can also see all of those sexy components through the large transparent side window.

The price includes a Blu-ray combo drive with a Gigabyte Force K3 gaming keyboard and M6900 optical mouse. A 23in AOC i2367FH monitor is included, which features an IPS panel for excellent colour reproduction and wide viewing angles, and a claimed 5ms response time, which is fast enough for all but the hardest of hardcore gamers.

The system is powered by a 3.4GHz Intel Core i5-4670K that's been overclocked to 4.4GHz. It's teamed up with 16GB of DDR3 memory and a roomy 256GB Plextor PX-M5S SD. This offers double the amount of high-speed flash storage found in any other system in this group test. The Infinity Perseus XT performed well in our application tests, scoring 6731 points in PCMark 7. This is a few points behind Chillblast and Wired2Fire, but close enough as to make no perceptible difference in general use.

Graphics processing is taken care of by one of AMD's latest R9 290 cards, featuring 4GB of video memory and delivering excellent

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

PC ADVISOR
RECOMMENDED



performance. Although beaten by the fastest nVidia cards at Final Fantasy XIV and Sniper Elite V2, the Infinity Perseus XT is the king of the hill playing Alien vs Predator.

VERDICT: CyberPower's Infinity Perseus XT is a traditional full-size gaming PC with great performance, strong peripherals and double the usual amount of SSD storage. Its larger case provides for easy access to components and ample options for upgrades. It is, however, the most expensive PC of the bunch.

QUIET PC SERENITY MINI GAMER

£1,213 inc VAT • quietpc.co.uk • tinyurl.com/nuhfm3u

Quiet PC operates according to an entirely different set of priorities. Whereas we're used to PCs with such intense names as 'Viper' and 'Warbird', Quiet PC offers up Serenity. Known for building quiet and even entirely silent systems, the company has made a few, but not many, concessions in the name of gaming performance.

Inside the minimalist glossy black housing of the soundproofed Nanoxia Deep Silence 4 system case we find a powerful 3.5GHz Intel Core i7-4770K processor, which adds Hyper-Threading and a slight speed bump over the 3.4GHz Core i5. Unfortunately, for those craving ultimate speed, this CPU is running at its stock speed and is therefore running slower than any of the overclocked Core i5 chips.

Overclocking requires considerably more power and more cooling, so Quiet PC has focused on keeping the system running as quietly as possible rather than reaching for the upper limits of speed.

PCMark 7 returned a score of 5098 points, which is hardly to be sniffed at, but when you consider that this is a more expensive processor delivering much lower performance than an overclocked Core i5, you'll need to share Quiet PC's preference for peace and quiet over performance if this is to be the gaming PC for you.

Gaming performance of the Serenity Mini Gamer also lags significantly behind the competition. Crucially, our high-quality 1080p-resolution tests all fell far below 60fps, so keen gamers will need to reduce quality settings to obtain smooth game play. Even the 720p-mode test of Alien vs Predator failed to reach 60fps.

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



The PC is fitted with a Gigabyte GTX 650 Ti OC Windforce graphics card, but its factory overclocking can't make up for this considerably less powerful GPU.

VERDICT: The Serenity Mini Gamer is beautifully put together and runs virtually silently. However, its powerful Intel Core i7-4770K processor hasn't been overclocked and therefore measures much slower than the competition. More important in its gaming role, the PC's GeForce GTX 650 Ti graphics card is no match for the likes of a GTX 780.

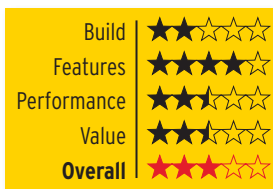
WIRED2FIRE DIABLO GTX - M

£1,199 inc VAT • wired2fire.co.uk • tinyurl.com/ps6ax9u

This month's group test features three compact gaming PCs, and of them all, the Diablo GTX - M is the most compact. Because of its smaller dimensions, space inside the case is tight and access to the components is restricted. Cooling is helped by a Corsair H80 liquid CPU cooling unit, which uses a radiator fitted to the rear of the case.

Like many gaming PCs in this price bracket, the Diablo GTX - M is fitted with a 3.4GHz Intel Core i5-4670K processor, overclocked to 4.4GHz. This speed should be easily achievable with such a processor; however, our review sample ran into problems when placed under load, often locking up completely. After a little tinkering, we were able to rectify this problem and maintain the 4.4GHz overclocked speed simply by using the automatic overclocking functions found in the EFI, but we really wouldn't expect the customer to have to do this sort of thing themselves. We want the PC to work as advertised straight out of the box.

Once we had the system running, we recorded a very good PCMark 7 score of 6880 points. Gaming results were also very good thanks to that powerful graphics card. You can play most games smoothly with the best-quality settings at the full resolution of the monitor. In this case, that's a 23in AOC i2369VM with an IPS panel and 1920x1080-pixel display.



What really sets this system apart from the rest is the price. It's one of the top performers, yet at only £1,199, you'll save hundreds of pounds choosing the Diablo GTX - M over one of its rivals.

VERDICT: If you demand high performance, but can do without the bulk, then Wired2Fire's Diablo GTX - M delivers a whole lot of frames per second in a compact package.

	ARIA £895 inc VAT ★★★★★	CHILLBLAST £1,299 inc VAT ★★★★★	CYBERPOWER £1,499 inc VAT ★★★★★
		PC ADVISOR BEST BUY	PC ADVISOR RECOMMENDED
Product name	FX-Viper 8320	Fusion Probe	Infinity Perseus XT
Processor	3.5GHz AMD FX8320 (4.4GHz OC)	3.4GHz Intel Core i5-4670K (4.4GHz OC)	3.4GHz Intel Core i5-4670K (4.4GHz OC)
CPU Cooler	Scythe Ashura Performance CPU cooler	Corsair H55	Coolermaster Seidon 120mm
RAM	8GB DDR3, 1600MHz	16GB DDR3 1600MHz	16GB DDR3 1600MHz
Storage	120GB Samsung EVO SSD + 2TB HDD	120GB Samsung EVO SSD + 2TB HDD	256GB Plextor PX-M5S SSD + 2TB HDD
Power supply	600W Corsair	750W Corsair	750W Corsair
Motherboard	Gigabyte GA-990FXA-UD5	Gigabyte Z87N-WIFI	Gigabyte Z87-HD3
Operating system	Windows 8.1	Windows 8.1	Windows 8.1
Display	None	23in Iiyama X2377HDS IPS	23in AOC i2367FH IPS
Graphics	Sapphire Radeon R9 280X Vapor-X OC, 3GB VRAM	Palit Jetstream GeForce GTX 780, 3GB VRAM	Powercolor AMD R9 290, 4GB VRAM
Sound	Onboard	Onboard	Onboard
Connectivity	Gigabit ethernet	Gigabit ethernet, 802.11n	Gigabit ethernet
Ports	4x USB 3.0, 14x USB 2.0	6x USB 3.0, 4x USB 2.0	6x USB 3.0, 4x USB 2.0
Optical drive	Lite-On DVD±RW	DVD±RW, Blu-ray combo (optional)	Lite-On DVD±RW, Blu-ray player
Case	Sharkoon Bulldozer	Aerocool Dead Silence Gaming Cube	Cooler Master Dominator 690 III
Keyboard & Mouse	N/A	Gigabyte M6800 mouse, Force K3 Keyboard	Gigabyte M6900 mouse, Force K3 keyboard
Other	None	Optional family software pack	None
Warranty	2-year collect-and-return	2-year collect-and-return	3-year RTB (2-year parts, 3-year labour)
PERFORMANCE			
PCMark 7 overall	5219	6965	6731
Games score (fps) ¹	141/79, 122/67, 236/134/34	169/93, 218/96, 308/187/49	172/96, 167/87, 352/155/39
Power consumption ²	147/657W	52/407W	68/484W

¹Games tested: Alien vs Predator 720p/1080p, Max; Final Fantasy XIV 720p Med/1080p Max; Sniper Elite V2 Low/720p/1080p, Med ²Measured when idle and under load respectively

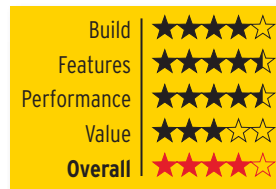
YOYOTECH WARBIRD RS2**£1,370 inc VAT** • yoyotech.co.uk • tinyurl.com/pmwpeLy

Yoyotech's Warbird RS2 is a compact Micro ATX form factor PC. The Aerocool DS Cube case makes another appearance here, this time in a fiery red colour that matches the detailing on the twin-fans of the factory-overclocked Asus GTX780 DirectCU II graphics card. This can be clearly seen through the case's transparent side panel.

What can't be seen, though, is the 3.5GHz Intel Core i7-4770K processor lurking behind. Unlike the identical chip found in Quiet PC's pedestrian Serenity Mini Gamer, this example has been wound up to 4.3GHz. Although that's 100MHz slower than the overclocked Core i5-4670K chips elsewhere in the group, the Core i7 adds Hyper-Threading support, which can add a significant boost to multitasking.

Our results show that its application performance is ahead of the field. However, its overall score falls a little behind the Core i5 systems. Furthermore, although the graphics card has been overclocked, it hasn't been pushed quite as much as the one used by Chillblast, so gaming framerates were slightly behind the Fusion Probe, too. These are very small performance differences, but you should keep in mind that the Yoyotech PC costs more than its closest rivals. At £1,370 it includes a DVD burner, but only 8GB of RAM.

It also comes with a 23in AOC i2369VM monitor with 1920x1080-pixel resolution, a high-quality IPS panel with a 5ms stated response

**BEST OVERALL PERFORMANCE**

time and built-in speakers. A Powercool Pro Type 768 keyboard and Powercool Jm-9032U mouse are included.

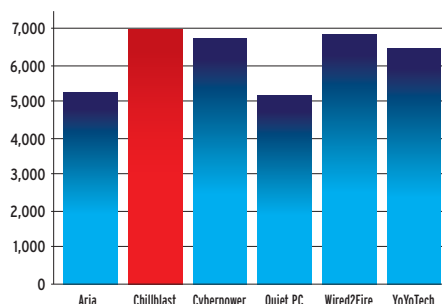
VERDICT: The Yoyotech Warbird features the fastest processor of the group and consequently delivers the best raw computing power. However, its Core i7 processor adds to the overall cost without significantly improving gaming benchmarks.

QUIET PC £1,213 inc VAT ★★★★★	WIRED2FIRE £1,199 inc VAT ★★★★★	YOYOTECH £1,370 inc VAT ★★★★★
Serenity Mini Gamer	Diablo GTX - M	Warbird RS2
3.5GHz Intel Core i7-4770K	3.4GHz Intel Core i5-4670K (4.4GHz OC)	3.5GHz Intel Core i7-4770K (4.3GHz OC)
Reeven Kelveros RC-1202	Corsair H80 CPU cooler	Corsair H80 cooler
8GB DDR3 1600MHz	16GB 1600MHz	8GB DDR3 1600MHz
Seagate 1TB SSHD (1TB HDD, 8GB SSD)	Samsung 120GB SSD + 1TB HDD	128GB Toshiba SSD + 1TB HDD
650W FSP	650W FSP	600W Cooler Master
Gigabyte Z87MX-D3H	Asus Z87M Plus	MSI Z87M-G43
Windows 8.1	Windows 8.1	Windows 8.1
None	23in AOC i2369VM IPS	23in AOC i2369vm IPS
Gigabyte GTX 650 Ti OC Windforce, 2GB VRAM	Palit nVidia GeForce GTX 780	Asus GTX780 DirectCU II OC
Onboard	Onboard	Onboard
Gigabit ethernet	Gigabit ethernet	Gigabit ethernet
6x USB 3.0, 2x USB 2.0	6x USB 3.0, 2 USB 2.0 rear	4x USB 3.0, 6x USB 2.0
Lite-On DVD ±RW	None	Pioneer DVD ±RW
Nanoxia Deep Silence 4	Bitfenix Phenom	AerocoolDS Cube Red with window
Zalman ZM-K500, Zalman ZM-M300	Gigabyte M6980X mouse, Force K3 keyboard	Powercool Jm-9032U mouse, kb-768 keyboard
Artisan Medium Hayabusa XtraSoft Mouse Pad	None	None
2-year collect-and-return	3-year return-to-base (2-year parts, 3-year labour)	3-year 'Silver' (1-year parts, 3-year labour)
5098	6880	6424
54/27, 130/36, 156/66/6	163/89, 227/92, 329/180/46	161/88, 228/95, 349/180/46
40/190W	55/395W	81/370W

>> How we test and our conclusion

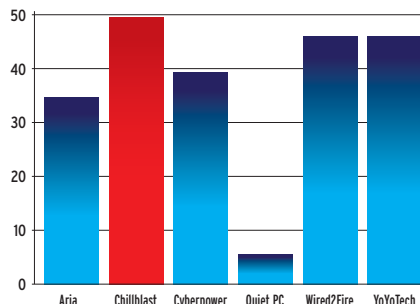
OVERALL SYSTEM PERFORMANCE

PCMark 7 Overall (points)



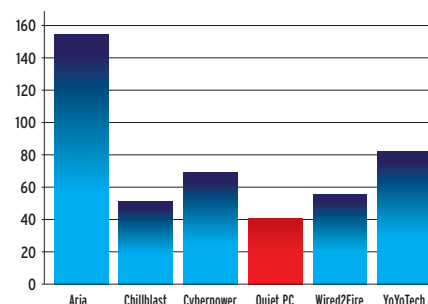
GRAPHICS PERFORMANCE

Sniper V2 Elite, 1080p (fps)



POWER EFFICIENCY

Idle power consumption (watts)



Conclusion

If your budget is tight, you can save a significant amount of money by hanging on to your old monitor, keyboard and mouse. Aria's FX-Viper 8320 expects you to take this approach and at £895 is by far the least expensive of the group. It's also the only system based on an AMD processor, and although it runs at the same 4.4GHz clock speed as most of the competition, it struggled to keep up the pace both when running apps and games.

The Serenity Mini Gamer from Quiet PC operates in near silence. It's reasonably priced, but doesn't include a monitor. Its CPU was also set at stock speeds, and

without overclocking, it inevitably turned in the slowest PCMark 7 scores. However, we're sure you'd be able to eke some more performance out of it.

For the best raw processing system performance, Yoyotech's Warbird RS2 came out on top with its Hyper-Threading Core i7 processor; but its high overall price isn't matched by higher gaming speeds.

Even more expensive is CyberPower's Infinity Perseus XT. It's a good performer featuring AMD-powered graphics in a full-sized case that's great for upgraders. It also includes a much larger SSD, Blu-ray playback and gaming peripherals.

In terms of sheer value for money, Wired2Fire's Diablo GTX-M is a good buy at £1,199, offering great features and excellent performance in a super-compact case. This PC came would have scored much higher had it not crashed in our testing. The case is also pretty cramped and it's not so easy to tinker inside.

Our Best Buy award goes to Chillblast's Fusion Probe, which sits in the middle of the price range, yet delivered the highest PC Mark 7 score and the fastest high-quality gaming results. There are better monitor, mouse and keyboard options here, but at this price it can't be faulted.

How we test

Application performance

We test each PC for performance, measuring its speed in everyday computing tasks and its ability to play games. For this group test, we used PCMark 7, an industry-recognised test suite that uses 25 different workloads to measure areas such as storage, computation, image and video manipulation, web browsing and gaming. An overall score in the high 6000s is excellent for an overclocked gaming system.

Gaming performance

We've used three games to evaluate graphics performance. We run our tests at 1280x720- and 1920x1080 pixels at various detail settings. Framerates are recorded using the following games and quality settings:

Final Fantasy XIV: 1280x720, Medium quality; 1920x1080, Maximum quality.

Alien vs Predator: 1280x720, all settings at Maximum quality; 1920x1080, all settings at Maximum quality.

Sniper Elite V2: 1280x720, all options set to Low quality, advanced shadows off, Supersampling off; 1920x1080, All options set to Medium quality, advanced shadows

off, Supersampling off; 1920x080, all options set to Ultra quality, Advanced shadows - high, 4x Supersampling. We've also added a test run at the lowest possible quality to allow comparison with non-gaming systems.

Power consumption torture testing

We measure the power consumption of each PC base unit (excluding peripherals) when idle and again while running at its performance limit. During the idle test the PCs hard drives are still spinning and the power-management features are not enabled. For the full-load torture test, we run Prime 95 to force all CPU processing threads to maximum utilisation and stress system memory. At the same time we run the Geeks3D Furmark benchmark to stress any installed graphics cards. We leave these tests running for 10 minutes, then record the system's power consumption and the CPU temperature reached.

Overclocking

Because gamers demand the best performance from their hardware, we allow vendors to overclock PCs in this category.

We require that any tweaked component is designed for overclocking, and that the PC vendor offers a comprehensive warranty to put things right in the event that the overclocking over-stresses your PC.

Subjective assessment

We pay close attention to the physical characteristics of each PC, its noise output and its build quality, delving inside the case and taking note of the quality of components used, cabling and airflow.

Good-quality peripherals are also important, and where they are supplied we note the ergonomics of the keyboard and mouse. Ordinary wireless keyboard and mouse combos are frowned upon in this category, whereas fast, responsive peripherals will impress.

Support

Differences in warranty terms can impact our scoring. Long warranties are sought after, but we also look at the terms and conditions - specifically, whether faulty PCs must be returned to the vendor at your cost and if both parts and labour are included. ☒



ND 4000 Gaming PC

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

RAM: Corsair 16 GB DDR3 1333 MHZ

HDD: 1 TB SATA-III 7200 RPM 64 MB

Graphics Card: NVIDIA GTX 660 2 GB

Motherboard: Gigabyte Z87-HD3

Case & PSU: Corsair R200 & Corsair 650W PSU

Optical Drive: 24x Dual Layer DVD Re-Writer

O/S: Choose from Windows 7 64 BIT or Windows 8 64 BIT.

Ports: USB2, USB3, LAN, 7.1 Audio, DVI & HDMI

FREE - Tom Clancys Spinter Cell Blacklist

FREE - 16 GB USB2.0 Flash Drive

FREE - 3 Year Warranty & Free Next Day Delivery

£943

Inc VAT & Delivery

Next Day Delivery PCs

ND 1000 Gaming PC

Amazing Price & Performance!

- ✓ AMD FX 4130 (4 x 3.8 GHZ)
- ✓ 16 GB DDR3 1333 MHZ RAM
- ✓ 1 TB (1000 GB) SATA-III
- ✓ NVIDIA GeForce GTX 650 1 GB
- ✓ Gigabyte GA-78LMT/USB3 Motherboard
- ✓ Windows 7 or Windows 8 Included

Included Benefits

- FREE - TOM CLANCY GAME
- FREE - UK DELIVERY
- FREE - 3 YEAR WARRANTY
- FREE - WEBROOT / NERO / POWERDVD



£545
INC. VAT &
DELIVERY



ND 2000 Gaming PC

Amazing Spec - Amazing Price

- ✓ AMD FX 8350 (8 x 4.2 GHZ)
- ✓ 8 GB DDR3 1333 MHZ RAM
- ✓ 1 TB (1000 GB) SATA-III
- ✓ ATI Radeon HD 7770 1 GB
- ✓ Gigabyte GA-78LMT/USB3 Motherboard
- ✓ Windows 7 or Windows 8 Included

Included Benefits

- FREE - BIOSHOCK GAME
- FREE - UK DELIVERY
- FREE - 3 YEAR WARRANTY
- FREE - WEBROOT / NERO / POWERDVD



£599
INC. VAT &
DELIVERY



ND 3000 Gaming PC

EXTREME Performance - LOW Price !!!!

- ✓ i5 4570 (4 x 3.2 GHZ)
- ✓ 8 GB DDR3 1333 MHZ RAM
- ✓ 1 TB (1000 GB) SATA-III
- ✓ NVIDIA GeForce GTX 660 2 GB
- ✓ Gigabyte B85M-HD3 Motherboard
- ✓ Windows 7 or Windows 8 Included

Included Benefits

- FREE - TOM CLANCY GAME
- FREE - UK DELIVERY
- FREE - 3 YEAR WARRANTY
- FREE - WEBROOT / NERO / POWERDVD



£756
INC. VAT &
DELIVERY



Customise and order our Next Day Gaming PCs before 4:00 PM for next day delivery.

Call 0161 850 33 11 or visit www.ComputerPlanet.co.uk/nextday/

MOTHERBOARDS POWERED BY:

GIGABYTE™

MEMORY POWERED BY:



THE WAY IT'S MEANT TO BE PLAYED:



ANDROID SECURITY APPS

Like Windows before it, the 'open' and popular Android system from Google has a weak security system that makes it prone to infection from dangerous malware. Barry Collins reveals the best six anti-virus apps for Android

The idea of installing security software on an Android smartphone might seem like overkill, but there are plenty of good reasons for doing so.

Anyone - fraudsters included - can submit apps to the Google Play Store without pre-approval, and apps can also be downloaded and installed from a wide range of other sources. That means Android users face a greater element of risk than those with iPhones or Windows Phone handsets, who can only install software that has been properly pre-vetted for safety.

The more open nature of the Android operating system makes it more susceptible to the kind of malware that

we've grown accustomed to dealing with on Windows PCs. Although the scale of the problem isn't yet as bad as it is on Windows, it remains a threat. The security software test lab AV-TEST (av-test.org), has no fewer than 1.8 million different pieces of Android malware in its database - malware that's typically used to steal your valuable personal data from your phone without your knowledge.

Yet, even if you're careful about what apps you install or which websites you visit, there are other strong motives for installing a security suite. Such apps routinely include anti-theft features, for example. Contrary to the name, they won't prevent your handset from being swiped,

but they may allow you to lock or wipe the data from your stolen handset. Some even include features that let you take photos or audio recordings of the thieves. If you've merely left the phone lying in a bar or restaurant, the anti-theft features can be used to locate your handset, and display a message on the lost phone's screen, providing instructions on how to contact you to return the handset.

Another useful feature commonly found in Android security suites is call blocking. If your mobile is plagued by nuisance calls or spam texts, you might be able to block the callers so that they don't interrupt your day. But this won't work when you're being plagued by pre-recorded calls hawking



VIRUS:

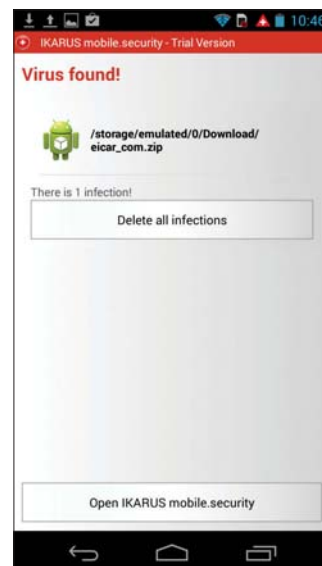
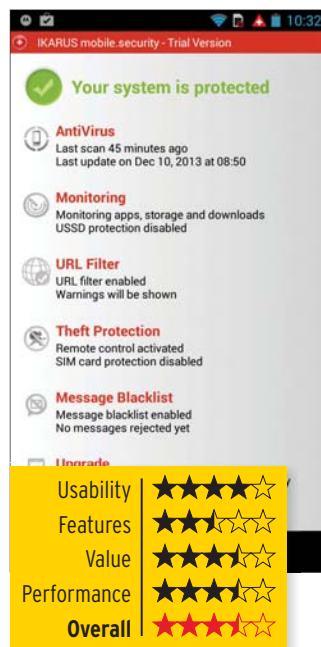
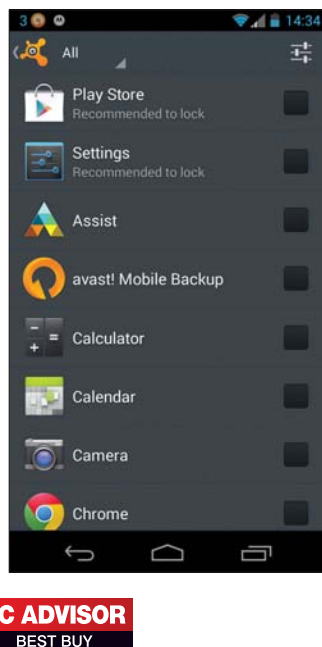
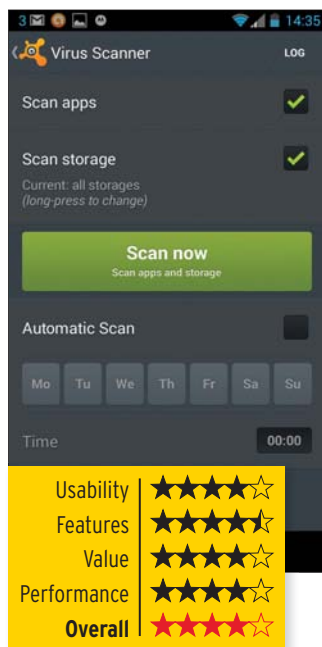
PPI refunds and the like, when the caller number is Unknown or Withheld.

Some apps include schedulers in their call-blocking facilities, so you can divert all calls from the office to voicemail at weekends, for example.

Some suites also include app managers that allow you to password protect access to the web browser or the Google Play Store - invaluable for parents who routinely hand their phone over to children to play games and worry that they might stumble

into something they shouldn't, or run up horrendous bills by purchasing apps.

Less useful are the backup facilities found in many of these suites. Some merely back up contacts, which Android already automatically does when you sign in with your Google account, while others only offer a tiny amount of space to store your photos and files. The Google+ app, on the other hand, can be set to automatically back up your photos, and that offers gigabytes of free space.



AVAST MOBILE SECURITY & ANTI-VIRUS

FREE (Premium tools, £12) • avast.com/en-gb • tinyurl.com/kktwbm6

Avast Mobile Security offers a barrage of handy security and backup tools, although you'll have to stump up for the Premium Tools (£12 per year) to access anything much past the basic virus scanning.

The anti-theft tools, which are installed as a separate, invisible app that thieves can't remove, are first-rate. Using a smartly designed web console or text message commands from another phone, you can potentially catch a thief red-handed by surreptitiously taking a photo with the phone's front or rear-facing camera, or by secretly recording audio, both of which are downloadable on your PC. Alternatively, there's an option to shame a pickpocket by blasting out a siren that also reads aloud the message: "this phone has been lost or stolen", which even turning down the volume won't silence.

The phone can also be remotely located on a map, locked or wiped, although when we unlocked our test phone, Avast had also switched on a handset PIN that wasn't previously activated. The PIN was blank and so easy to override, but it could leave people locked out of their own handset, which isn't good.

Other notable features include application locking, which forces a user to enter a PIN to open certain apps: handy for blocking off access to the Play Store or web browser if you routinely hand your phone to the kids to play games, for example. A built-in 'firewall' lets you bar certain apps from using 3G, Wi-Fi or roaming data, although the handset needs to be rooted for this feature.

Call blocking allows you to bar calls or text messages from selected callers to a schedule of your choice, which worked perfectly in our tests. However, it would be nice to at least get a notification that a call was blocked.

Perhaps the weakest part of Avast's service is, ironically, the anti-virus protection. While it blocked 100 percent of the malicious apps thrown at it by AV-TEST, it allowed us to download and store a test virus that other security apps quarantined immediately; only when we ran a full device scan did it detect and eject the Trojan. Likewise, it didn't bar us from opening websites in any of the genuine phishing emails we've been sent.

VERDICT: A comprehensive suite of security and backup tools, with a strong set of anti-theft features that could well catch a thief in the act. However, we'd like its anti-virus protection to be more proactive.

IKARUS MOBILE SECURITY

€9 per year (£7) • ikarussecurity.com/at • tinyurl.com/ovxss5o

Ikarus isn't one of the better known security brands, but its Android anti-virus performance is right up there with that of the Windows household names. In the AV-TEST labs it nullified all of the malicious apps discovered in the past four weeks, which means you can download from the Google Play Store with a little more confidence.

Ikarus quietly gets about its work: when you download an app from the Play Store a subtle notification pops up post-download to inform you it's being scanned for viruses, and then disappears if it finds nothing amiss. However, it's not shy when it discovers something fishy. When we downloaded a test virus, it immediately displayed a full-screen message asking us if we wanted to delete the malicious file, which is the kind of unavoidable alert we like to see.

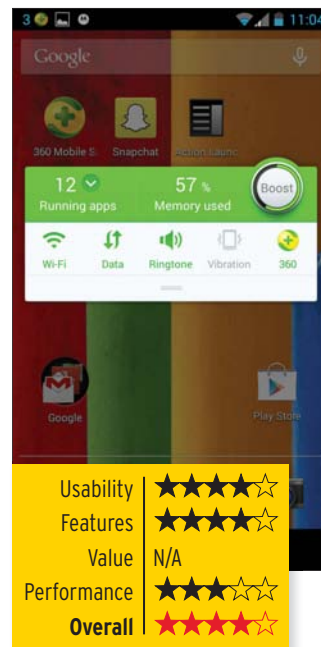
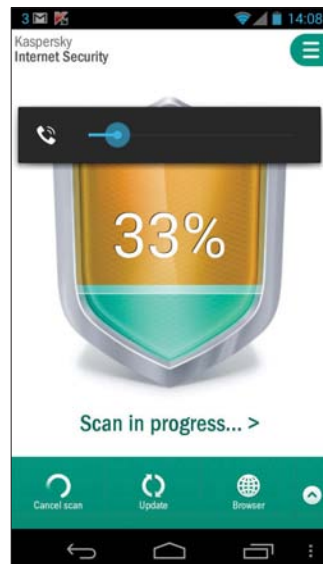
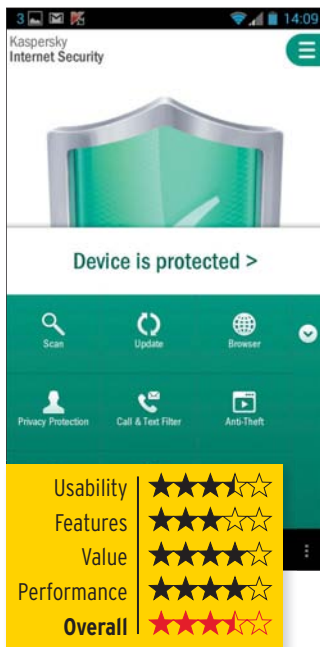
The app itself is unshowy and has minimal impact on system resources or battery life, although it has far fewer features than rivals such as Avast. Virus definitions can be updated up to twice a day to make sure you're protected against the latest threats.

Setup is quick and fuss-free, too, with only three screens to deal with for setting up text-message blacklists, website scanning and remote security features. Sadly, the actual implementation of those remote security features involves a great deal of hassle.

You can remotely lock your phone by sending a text message with your password from another device. The phone rings repeatedly when you've remotely locked the handset, however, which could leave you with some explaining to do if you've left it on your desk at work, for example. Even worse, the first time we attempted to unlock the phone with our password, the device crashed while continuing to blare out the ringtone, and had to be rebooted before it would accept our password. Meanwhile, the sending device was hit with three identical text messages saying the phone had been unlocked.

The remote wipe function was less painful. It discretely powered down the phone and reset the device to factory settings, clearing off all our photos, apps and other data in the process. And because the whole process is handled via SMS, the phone doesn't need to be within Wi-Fi or even 3G range to be secured from a distance.

VERDICT: A lightweight and unobtrusive security app, which has an impressive clear-up rate when it comes to detecting malicious apps. The remote lock feature proved problematic, though.



PC ADVISOR
RECOMMENDED

KASPERSKY INTERNET SECURITY

FREE (Premium tools, £9) • kaspersky.co.uk • tinyurl.com/novrnue

Kaspersky recently merged its Android smartphone and tablet security products into one, and it certainly looks the part. The big shields that fill up to show you the completion percentage of virus scans and updates are about as user-friendly as these apps come, although in other respects Kaspersky can make life a little more difficult for the user than it should.

For example, Kaspersky shows a fleeting notification to tell you it's completed a virus scan after you install a new app, but that notification disappears in the bat of an eyelid, and on our test Motorola Moto G handset, the message ran off the edge of the screen, making it unclear whether Kaspersky had found a problem with the app or not. Luckily, with a 100 percent success rate in detecting malware-laden apps in the most recent AV-TEST labs, you can be sure it's going to root out the known bad apples.

By default, malicious apps is all Kaspersky will keep an eye out for. If you want file scanning and browser protection, you'll have to pay and, oddly, switch on the Extended Protection option in settings. Once switched on, we were pleased to see Kaspersky send out a screeching alert when we used our browser to download a test virus, and the file was immediately placed in quarantine. Once again, however, the notification swiftly disappeared, and we had to delve deep into the menus to find evidence of the quarantined file.

The anti-theft features are rudimentary compared to those of Avast, but they work well. Remote commands can be sent either via SMS or Kaspersky's well-designed web console. The lock and locate feature pinpointed the position of our 'missing' phone over both Wi-Fi and 3G, and the option to insert a custom message on the lock screen is a bonus for those wanting to offer passers-by instructions for handing in a lost phone. The option to surreptitiously snap photos using the phone's camera also did the job admirably, delivering five crisp snaps that could well identify whoever's using the phone. The only anti-theft disappointment was the alarm, which merely produced a short, rather muted buzzer noise, which wouldn't help you locate a phone that had fallen down the back of the sofa.

VERDICT: A slickly presented app that does a decent job of proactive protection. A few usability flaws and a limited set of anti-theft and extras stunt its appeal, but that's reflected in the reasonable price.

QIHOO 360 MOBILE SAFE

FREE • 360safe.com • tinyurl.com/nvnbjkd

360 Mobile Safe is the only app in this test that's completely free. It's made by the listed Chinese company, Qihoo. Although free apps from relatively unknown foreign companies raise our suspicion levels, we could find nothing untoward in the licence agreements.

Certainly, AV-TEST found little at fault with its malware detection, either, with Qihoo spotting an almost perfect 99.9 percent of known malicious apps. There are nice, clear notifications when a newly installed app has been scanned, and you can launch the app straight from the notification. Its anti-virus performance is less convincing: it failed to detect our test virus, even after a full system scan, and allowed us to click on all the phishing links in our spam folder. However, Qihoo offers much more than mere malware scanning.

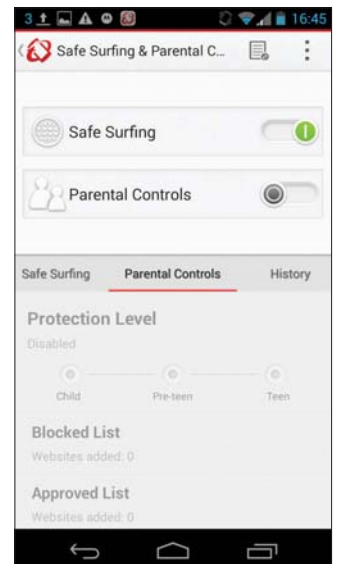
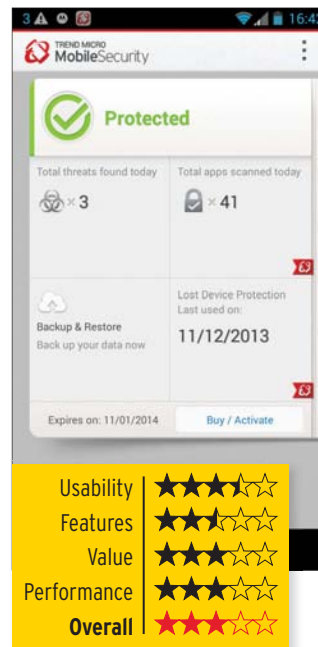
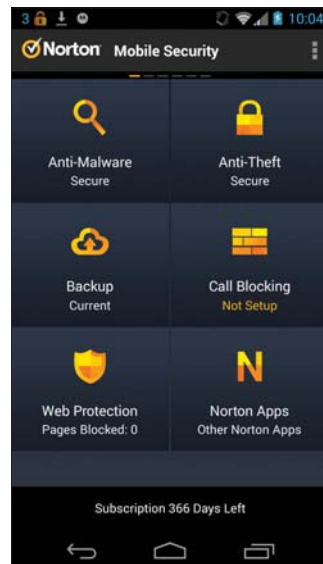
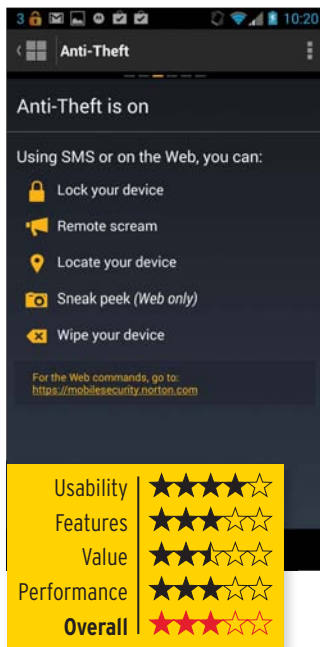
The smartly presented app includes a series of phone optimisation and clean-up tools that shut down unused memory-consuming apps and delete unnecessary system files, helping to keep low-powered handsets ticking more nicely. This clean-up facility can be started by shaking the handset from the home screen, which also opens a basic Breakout-style game while the tidying is taking place.

There's an optional pop-out window, which is activated by tapping on a tiny indicator pinned to the right of the homescreen that displays how much of the phone's memory is currently being used. Open it up, and you can press the Boost button to free memory, or activate a number of other phone controls.

The call blocking tools are better than most of the others apps on test here, too, with options to blacklist and whitelist callers, bar certain keywords in text messages, and apply filters to a schedule. You can block work calls at weekends, for example.

The anti-theft tools include options to locate and lock the handset remotely, as well as sound a blaring alarm or delete personal data from the device – this isn't the full factory reset we prefer. Another downside is that the anti-theft features can only be activated by SMS from another phone, not via a web console, and the delete data command can only be issued from another trusted number.

VERDICT: A vast array of security and useful phone management tools, all offered without any charge whatsoever. We'd like its anti-virus to be more proactive and the anti-theft tools are relatively weak, but it's harder to complain when it's free.



SYMANTEC NORTON MOBILE SECURITY

FREE (Premium tools, £29) • symantec.com/en/uk • tinyurl.com/q8f3p2t

Norton is one of the biggest names in the security business, and there's no questioning that it knows what it's doing when it comes to detecting apps known to be laden with malware: a score of 100 percent in the AV-TEST labs is proof of that. You might wonder if Norton is actually scanning new apps after you've installed the software and there's no notification that it's doing so, but you can turn these on in the app's settings.

The app also scans your web browser for suspicious activity, although we couldn't do anything to set its alarm bells ringing: downloading a test virus, clicking on links in phishing emails, and clicking on all manner of dubious ads on file-sharing sites didn't once provoke Norton to step in, unlike other packages on test here.

Norton doesn't offer as many anti-theft features as Avast and there are some worrying holes in them. The wipe-device setting is woefully ineffective. It doesn't perform a factory reset on the device, but merely clears out contacts, files and other personal data. Yet, it still left our Gmail account accessible on the device, as well as all our apps and access to the Play Store.

Locking the device is more effective. The lock feature doesn't set off any audio alarms, which we think is a more sensible approach that's less likely to put off a passer-by from picking up a lost handset and handing it in. You can also type a custom message on the lock screen, perhaps offering a reward for the safe return of the phone.

Location tracking proved a bit wayward in our tests. With Wi-Fi turned on, it gave our next-door neighbour's address, which is forgivable, but relying on 3G alone it placed the phone 500m and three streets away, which is of little use. When we tried to use the Sneak Peek feature that takes a snap from the phone's camera, we received a warning that this feature wasn't available in our country 'due to privacy laws', yet when we locked the phone, it automatically took some photos using the camera, which is contradictory.

Call blocking is also rudimentary. You can choose to block a contact's calls or text messages, or both, but there's no scheduling, so you can't divert work calls to voicemail at weekends, for example.

VERDICT: Norton provides a respectable set of features in a smartly presented package, but there's not enough here to justify the high annual price tag for Premium features.

TREND MICRO MOBILE SECURITY

FREE (Premium tools, £14) • trendmicro.co.uk • tinyurl.com/n9ec7sf

Trend Micro is a long-established name in the security business, so it's disappointing to see its Android app fall short. Let's start with the positives. A 100 percent detection record for recognised malicious apps in the most recent AV-TEST labs is to be applauded. Trend Micro was also the only app here to bar us from visiting sites linked in phishing emails that had accumulated in our Gmail spam folder.

It didn't proactively scan and block the test virus we downloaded, but once we ran a full device scan it spotted and quarantined the miscreant. However, it only did that once we had turned on the option to scan files in the settings – by default it's only set to scan for rogue apps. Trend Micro provides a clear notification every time it scans an installed app or file, which is reassuring, although these alerts clutter up Android's notifications panel after a while.

The anti-theft features are poor and can only be activated via a web portal – there are no SMS controls, like many of the other packages here. There are only four options: locate, lock, scream alarm and wipe. Our device was located to within one house over both Wi-Fi and 3G, and the lock feature worked well without sounding an alarm, which we think is wise.

Wipe provides the option to clear off only personal data or a full factory reset, the latter being our preferred method, which worked almost instantaneously over a 3G connection.

Trend Micro is the only company here to offer parental controls in its mobile app, but they are laughably easy to circumvent. Merely putting the Chrome browser into Incognito Mode was enough to throw the parental control, giving us unfettered access to pornographic sites, Facebook and all the other sites that would normally be blocked under the strictest parental control setting.

Calls and texts can be blocked based on both a blacklist or whitelist (where you only let through certain callers), and there are different options on how to handle unwanted calls, ranging from straight-to-voicemail to silencing the device. However, calls from blacklisted numbers cause the phone to buzz and light up briefly before they're intercepted, which is irritating.

VERDICT: Solid anti-virus and rogue app protection, but the extras let Trend Micro down. The anti-theft features are limited and weak, while the parental controls are embarrassingly easy to skirt around.

TIME TO GO DIGITAL



Don't miss a single copy of **PC Advisor** by subscribing digitally

Subscribe from as little as **£1.99**

PC ADVISOR



Conclusion

In terms of their ability to detect today's recognised malware lurking inside Android apps, there's almost nothing to separate our six contenders – they all do a faultless or near-perfect job, according to AV-TEST's results (see the table below). Big differences do emerge when it comes to the additional features they offer, especially the potentially valuable anti-theft features. Here, it was disappointing to see Norton Mobile Security fall behind the pack, especially given it's the





most expensive package on offer here. Ikarus is also light on features, but performs well and is significantly cheaper than Norton.

Kaspersky and Trend Micro both offer solid packages, but both have weaknesses: Kaspersky has a couple of notable usability flaws while Trend Micro's extras let the side down, especially its weak anti-theft and parental control features.

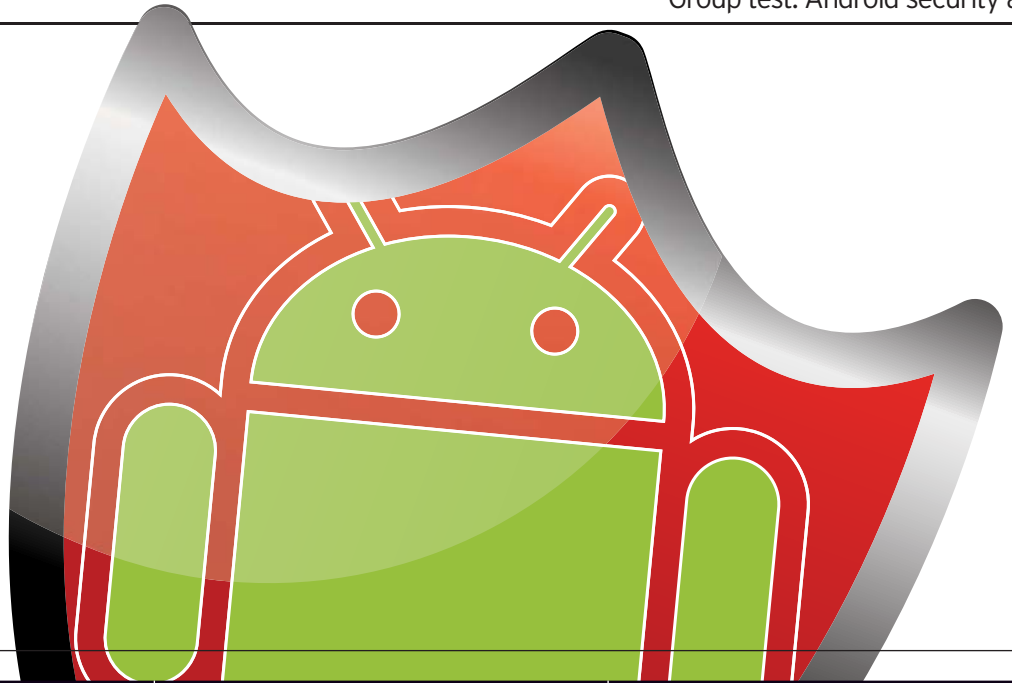
In the end, it's a shootout between the free Qihoo 360 Mobile Safe, which packs

in an astonishing number of features for an app that is completely free, and our favourite package from Avast, which charges a modest fee for a wide breadth of features and the best anti-theft tools of any of the apps on test here.

It's the flexibility and variety of those anti-theft tools that narrowly earns Avast Mobile Security & Anti-Virus our Best Buy award, but Qihoo 360 Mobile Safe earns a richly deserved Recommended.

	AVAST FREE (Premium tools £12 per year)  	IKARUS €9 (£7) per year 	KASPERSKY FREE (Premium tools £9 per year) 	
Package name	Mobile Security & Anti-Virus	Mobile Security	Internet Security	
PROTECTION				
Malicious apps detected	100%	100%	100%	
USABILITY				
Battery life unaffected	✓	✓	✓	
Performance unaffected	✓	✓	✓	
Minimal traffic generated	✓	✓	✓	
False warnings during installation of apps from Google Play	0	0	0	
False warnings during installation of apps from third-party stores	0	0	0	
FEATURES				
Locate/lock/wipe device	✓/✓/✓	✓/✓/✓	✓/✓/✓	
Call blocker	✓	x	✓	
Message filter	✓	✓	✓	
Safe browsing	✓	✓	✓	
Parental control	x	x	x	
Backup	x	x	x	
Encryption	x	x	x	
SCORES				
Protection (out of 6)	6	6	6	
Usability (out of 6)	6	6	6	
Total points	12	12	12	
AV-TEST certification	✓	✓	✓	

All table data supplied by AV-TEST


QIHOO
FREE

PC ADVISOR
RECOMMENDED
360 Mobile Safe
SYMANTEC
FREE (Premium tools £14 per year)

Norton Mobile Security
TREND MICRO
FREE (Premium tools £14 per year)

Mobile Security

99.9%

100%

100%

✓

✓

✓

✓

✓

✓

✓

x

✓

0

0

0

1

0

0

x/x/x

✓/✓/✓

✓/✓/✓

✓

✓

✓

x

✓

✓

✓

✓

✓

x

x

✓

x

x

x

x

x

x

5.5

6

6

6

5

6

11.5

11

12

✓

✓

✓

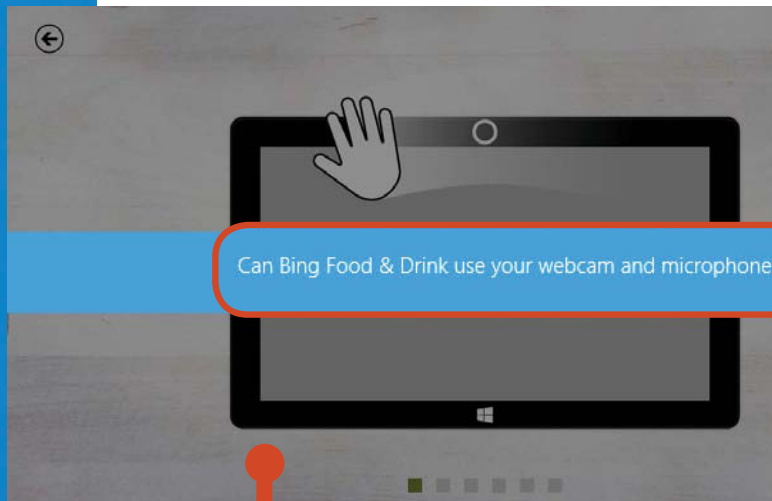
24 features hidden in Windows 8.1

Tiles. Files. Apps and Snaps. The update is jam-packed with little things that add up to a big improvement over Windows 8, writes Brad Chacos

It's the little things that count. And that's definitely the case with Windows 8.1. We've found that the OS holds plenty to discover, yet it doesn't actively point you to some of the cooler things it has on tap.

No more! Discover a universe of hidden extras that range from the mundane to the mind-blowing. You could spend hours scrounging for them all, or you could just read this article. Enjoy.





Look, no hands!

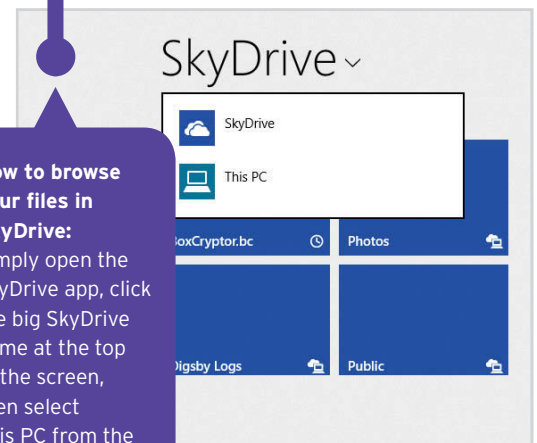
One of Windows 8.1's coolest tricks is buried deep in the new Food & Drink app. The app is chock-full of recipes for all sorts of delectable goodies, but touchscreens and foodstuffs don't mix so well. Enter handsfree mode.

In handsfree mode, simply waving your sauce-stained hand in front of your device's webcam flips through the steps of the recipe. Your touchscreen stays clean, your food gets cooked, and the whole thing is so novel (yet practical) that it feels like magic.

The SkyDrive app: A modern File Explorer

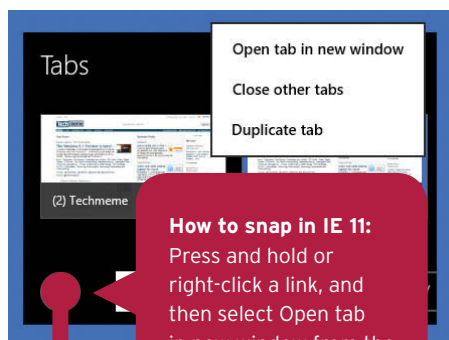
SkyDrive knits itself thoroughly into Windows 8.1, as evidenced by the invitation to save all your photos and files to the cloud once you install the OS update, and SkyDrive's prominent spot in the desktop File Explorer.

Microsoft's cloud service fills the much-needed role of a Modern-UI File Explorer in Windows 8.1 as well, allowing you to browse your files from the finger-friendly interface.



How to browse your files in SkyDrive:

Simply open the SkyDrive app, click the big SkyDrive name at the top of the screen, then select This PC from the drop-down menu



How to snap in IE 11:

Press and hold or right-click a link, and then select Open tab in new window from the context menu. Other apps don't appear to offer multiple-window capabilities, alas

One app, many windows

The ability to dynamically readjust the Snap ratio of multiple apps opened side by side is a small yet major improvement in Windows 8.1, but one of its auxiliary features isn't getting much airtime. Windows 8 allowed you to have only one Modern app open in a single window at a time; you couldn't, for example, snap two instances of Internet Explorer next to each other.

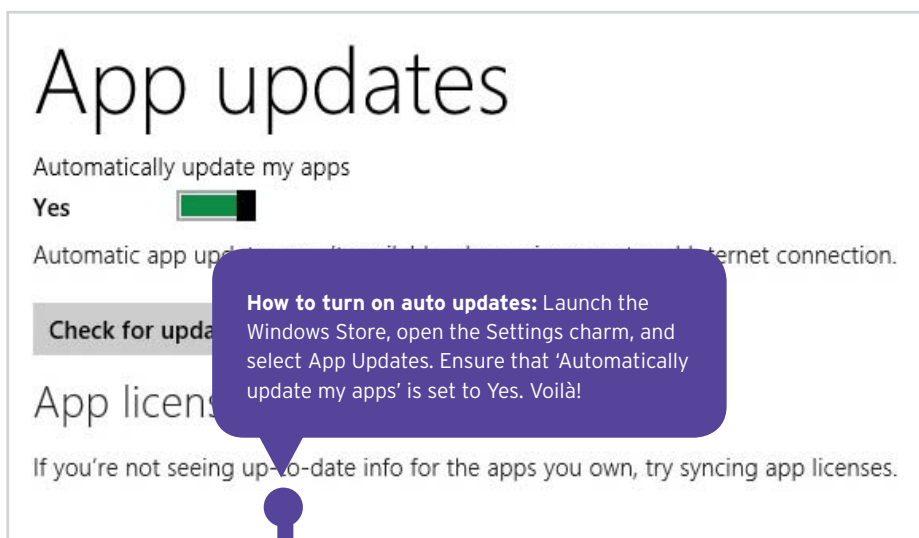
Now you can in Windows 8.1 - at least with Internet Explorer 11, the app that needs those capabilities the most. You can't just snap the app to one side and open it again, though.

Internet Explorer 11 Reading View

Internet Explorer 11 is one of the slickest touch-friendly browsers around, and buried within it is a setting that makes browsing the web even more pleasant: Reading View. This mode strips the clutter (as well as the ads) from the article you're reading and presents the information in an attractive, horizontally scrolling format.



How to enable Reading View: Just click the open-book icon on the right side of IE 11's address bar. Shown here is a PCAdvisor.co.uk article displayed in standard view (left), and the same article in IE 11's Reading View (right)



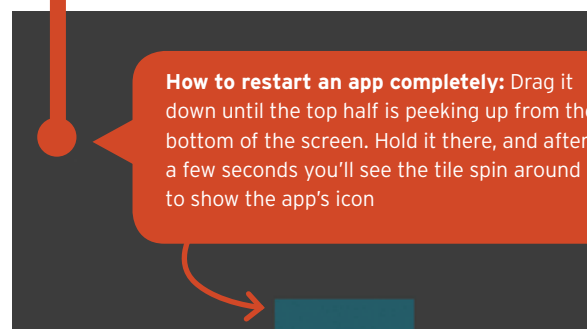
How to turn on auto updates: Launch the Windows Store, open the Settings charm, and select App Updates. Ensure that 'Automatically update my apps' is set to Yes. Voilà!

Automatic app updates

Windows 8 required you to dive into the Windows Store and manually update all your Modern apps. Windows 8.1 handles the hard work in the background – if you activate the option.

Restarting apps

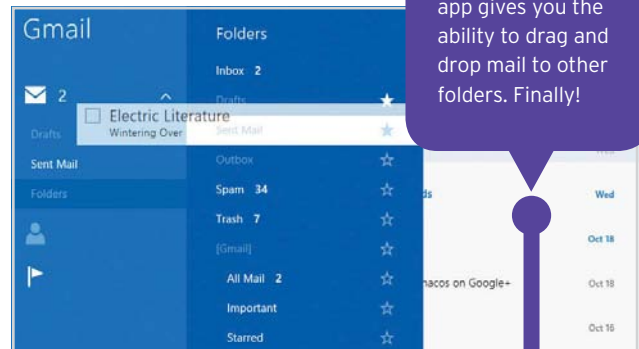
In Windows 8, dragging apps down off the bottom of the screen closed them. In Windows 8.1, it only hides them—the app continues to run in the background.



How to restart an app completely: Drag it down until the top half is peeking up from the bottom of the screen. Hold it there, and after a few seconds you'll see the tile spin around to show the app's icon

Major Mail tweaks

Microsoft tweaked Windows 8.1's Mail app far more than any other native app, and the beauty here is more than skin-deep. Clicking hyperlinks in Mail automatically opens the page in a snapped version of Internet Explorer 11, allowing you to browse the site without leaving your inbox (assuming that Internet Explorer is set as the default browser and can run in the Modern environment, that is). It's a small change, but offers a huge boost in usability.



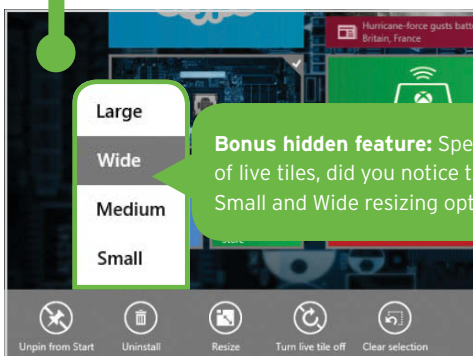
Plus: Another small yet crucial addition to the Mail app gives you the ability to drag and drop mail to other folders. Finally!

Batch app-editing tools

Tinkering with apps and live tiles in Windows 8 was an exercise in tedium: you had to manually delete or resize apps one by one. In Windows 8.1, entering the Start screen's Customize mode (right-click an empty part of the Start screen, and then select

Customize in the bar that appears at the bottom) allows you to select several apps simultaneously and then move or resize their tiles - or uninstall the apps completely - en masse.

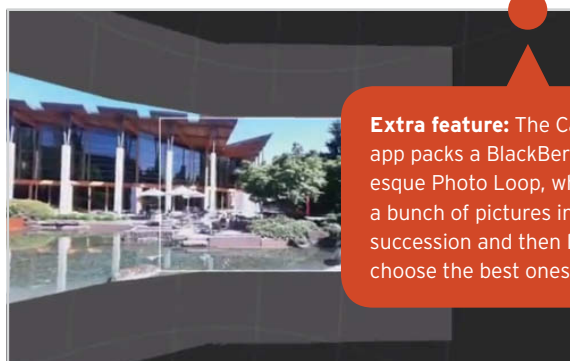
To see additional controls, open the Search and apps section in the Modern PC Settings and then navigate to the App Sizes menu. There you can see how much space each app is chewing up and delete any hogs if desired.



Bonus hidden feature: Speaking of live tiles, did you notice the new Small and Wide resizing options?

Camera app improvements

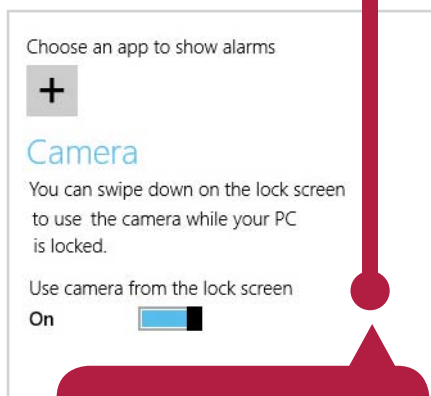
The tweaks continue once you open the Camera app, which can now take panoramas in the style of Microsoft's Photosynth app (shown at left), although the feature isn't supported on all hardware, even if you have a webcam. An icon will appear if your device is compatible.



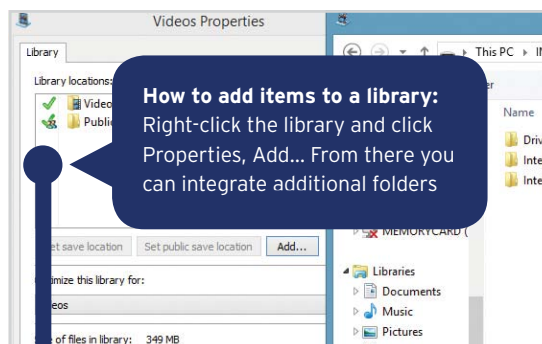
Extra feature: The Camera app packs a BlackBerry 10-esque Photo Loop, which takes a bunch of pictures in rapid succession and then lets you choose the best ones to keep

Apps available directly on the lock screen

Some new features are available right when you start Windows 8.1. For example, you can now access the Camera app directly from the lock screen, for those times when you need to quickly grab a snapshot. It won't mean much to proper-PC users, but it's a helpful touch for early adopters of Windows 8 or Windows RT tablets.



That's not the only change: You can now answer Skype calls and messages straight from the splashscreen, too



Library support for removable media

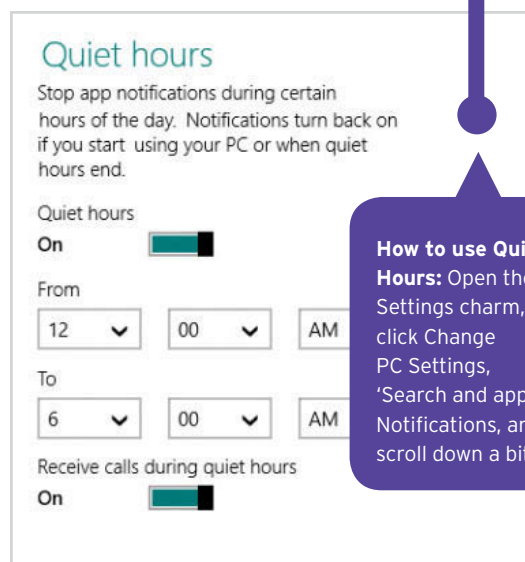
Yep, Windows 8.1 disables libraries by default, although you can easily turn them back on. But don't stop there. Libraries in Windows 8.1 now allow you to include locations on removable storage - something you couldn't do in the original Windows 8 OS.

That matters because Windows 8.1 ships on numerous laptops, hybrids and tablets with space-limited flash storage or solid-state drives. If you plan on watching videos on your Windows tablet, for example, a removable thumb drive is virtually a must-have. Thanks to the Windows 8.1 tweak, you can now have the flicks that are stored on your thumb drive appear in your Videos library when it's connected.

Silent notifications

With Windows 8, Microsoft mashed disparate desktop and mobile elements into a singular whole. One of those mobile elements is app notifications, which pop up with a sound. In standard use, notifications are pretty wonderful (although a discrete notification centre would be nice). But if you're using a tablet or if you leave switched on your PC 24/7, those subtle chimes can become an ongoing annoyance.

Rejoice! Windows 8.1 adds a Quiet Hours setting that lets you silence notifications (and calls, optionally) during specific times of the day.

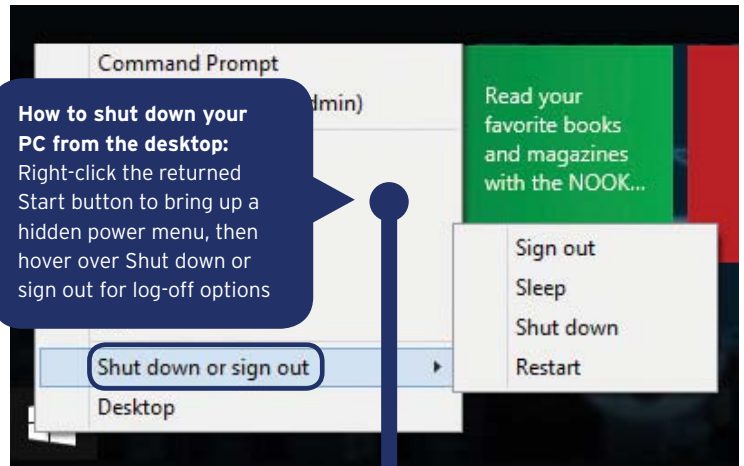


How to use Quiet Hours: Open the Settings charm, click Change PC Settings, 'Search and apps', Notifications, and scroll down a bit

Secret desktop shutdown

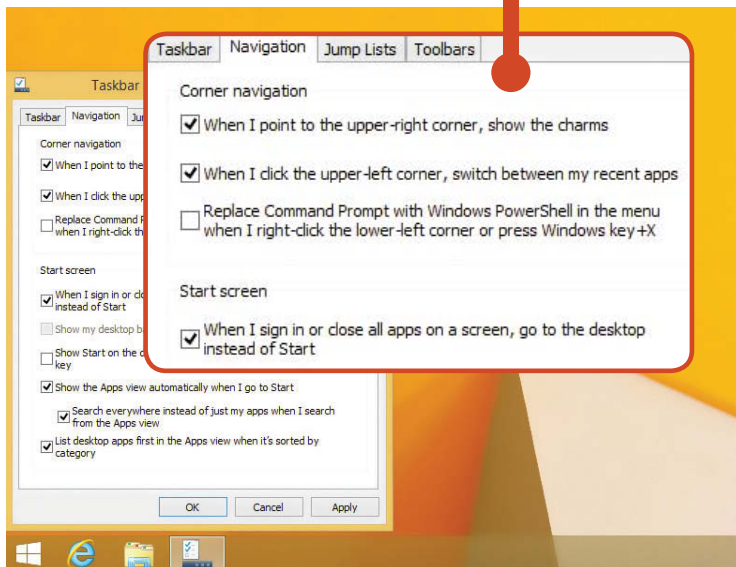
Sure, you can eradicate the Modern UI if you like, but shutting down requires a jaunt into the charm bar, right? Wrong.

How to shut down your PC from the desktop:
Right-click the returned Start button to bring up a hidden power menu, then hover over Shut down or sign out for log-off options



Secret desktop bliss

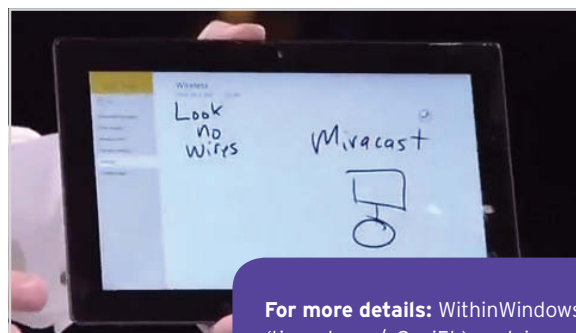
Speaking of the desktop, right-click your taskbar, select Properties, and open the Navigation tab - a new addition to Windows 8.1. Inside, you'll discover a bounty of tools with a pro-desktop bent that will let you disable some hot corners, boot directly to the desktop, and more.



Miracast wireless display support

You can wirelessly beam your Modern-style apps to a discrete display - but only if your Windows 8.1 device supports the nascent Miracast standard, and if the receiving display does as well.

The Surface Pro supports Miracast; you can also buy set-top boxes that support the standard, such as the Netgear Push2TV.

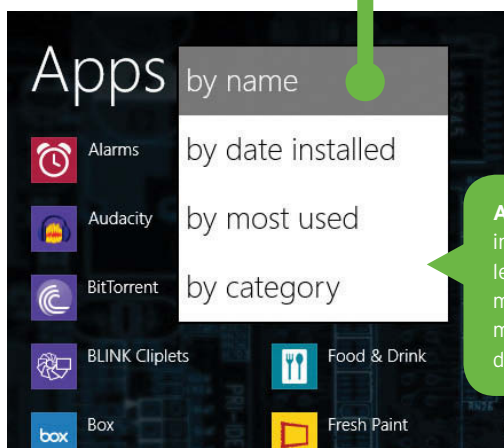


For more details: WithinWindows (tinyurl.com/n9pzj5h) explains how to get rolling with wireless display support. For most people, though, this is a Windows feature that will remain hidden until Miracast gets wider support

All Apps sorting

One hidden desktop option is to launch the All Apps screen, rather than the Modern Start screen, when you click the desktop's Start button. In the 8.1 update, you can also open the All Apps screen either by clicking the small arrow in the lower-left corner of the tiled Start screen or by swiping up on a touchscreen device.

The All Apps screen itself sports a much-needed makeover in Windows 8.1.



Auto fix



Basic fixes



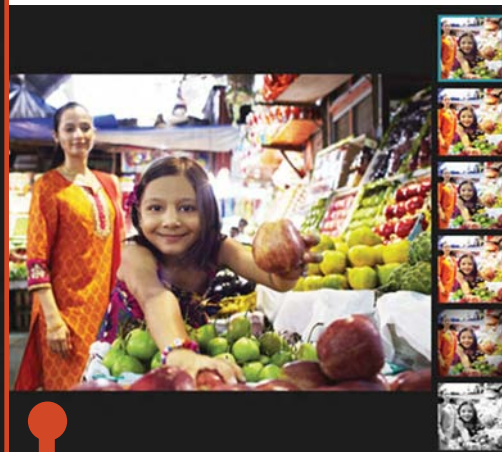
Light



Color



Effects



Finagling with Photos

The Photos app may have lost its Facebook and Flickr integration, but it has gained a handful of basic image-editing tools. It's no Photoshop, but you're now able to crop images, adjust the focus and colour, and add numerous effects from within the app itself.

About the revamped Apps: A static list in Windows 8, the Windows 8.1 iteration lets you sort apps by name, date installed, most used or category. The secret taskbar menu mentioned previously lets you have desktop programs appear first on the list

How to share: Open the Share charm and click the app you're using. Select Screenshot from the drop-down menu, then click the name of the app you want to use to share the image

Share

Screenshot ▾

Share a screenshot of People



Box



Fresh Paint



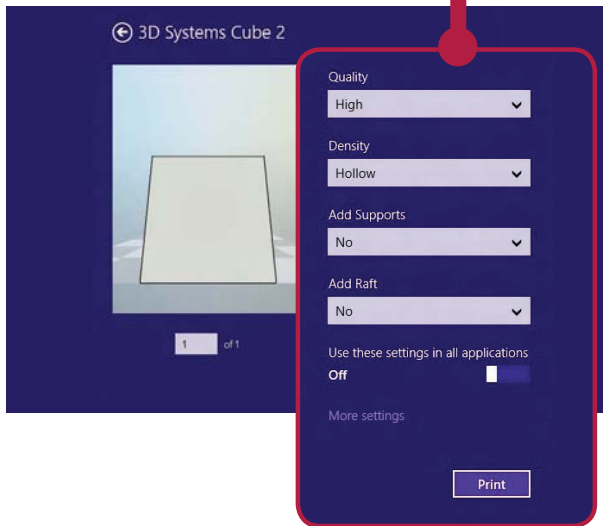
Mail
Send an email



Twitter

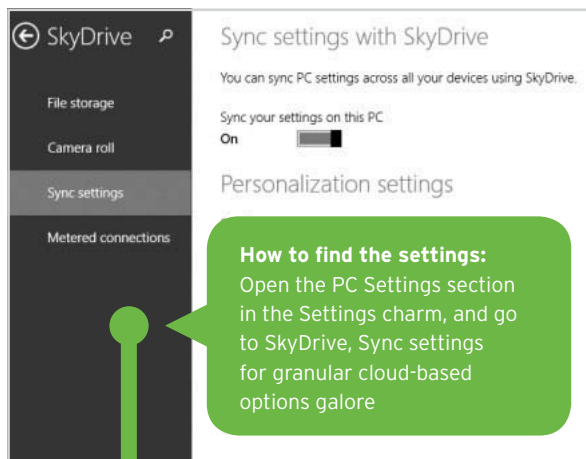
Built-in screenshot sharing

This small Windows 8.1 addition is a big boon for tech journalists or anyone else who needs to share something that's happening on their screen with colleagues or friends.



The cutting edge of printing

In another bout of future-proofing, Microsoft built robust 3D-printing support into Windows 8.1, so printing real things will be as seamless as printing on paper. And even if you're stuck in two dimensions, Microsoft is pushing the bleeding edge of printer tech: Windows 8.1 supports NFC tap-to-print and Wi-Fi Direct printing. Who needs local networks?

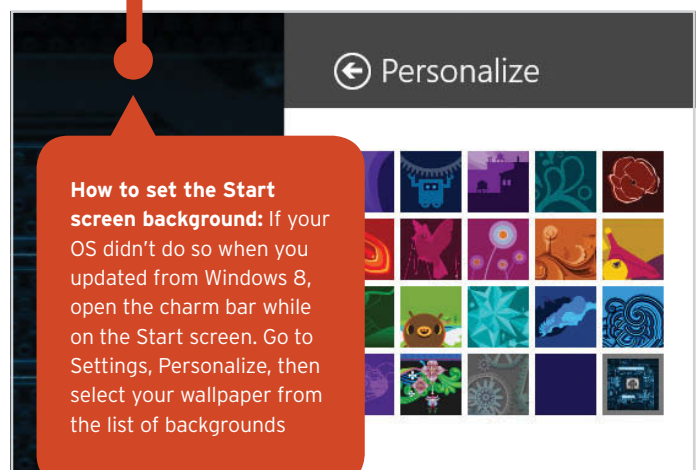


New (and super) sync settings

SkyDrive was a big deal in Windows 8, but it's an integral part of Windows 8.1's vision for 'One Windows across many devices'. Great new cross-device synching options abound in Windows 8.1, including the ability to sync your app list, your Start screen layout, and even your Internet Explorer 11 tabs.

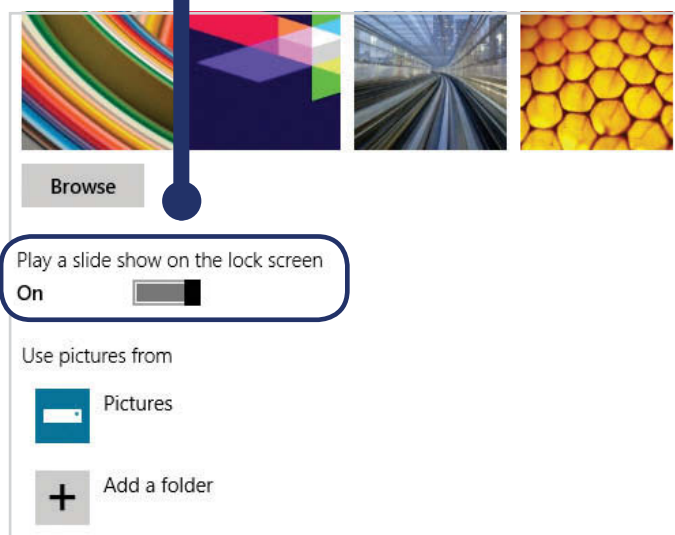
System-wide wallpaper

One of Windows 8's biggest problems lies in its very nature: the desktop and Modern UI feel like two warring operating systems battling for your attention, rather than a single, cohesive whole. The core experience remains the same in Windows 8.1, but the tweaked OS is packed with refinements to make the two environments play nicer with each other, including the ability to use your desktop wallpaper as your Start screen background.



Lock-screen slideshow

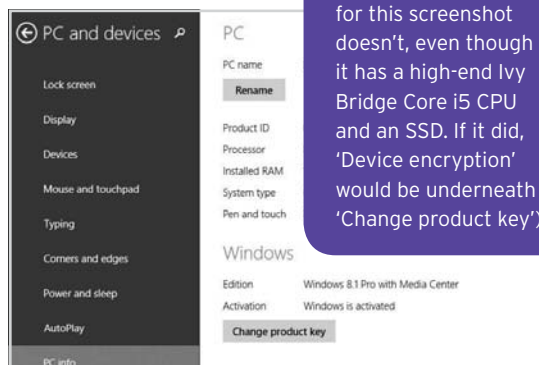
Sick of the static appearance of Windows 8.1's lock screen? Turn your monitor into a digital picture frame by diving into the Settings charm and heading to 'Change PC Settings', Lockscreen. Enable 'Play a slide show on the lock screen' and a wealth of options will crop up.



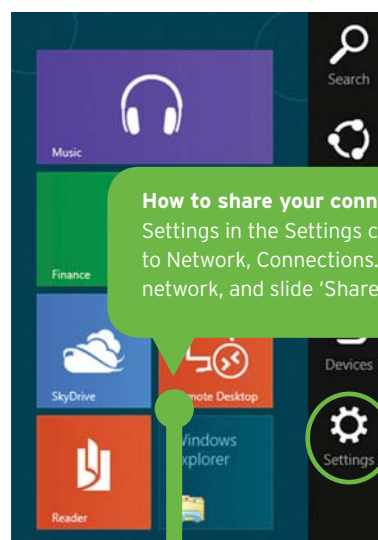
Default device encryption

Like Windows RT, Windows 8.1 now encrypts your storage drive - maybe. While all Windows RT tablets support encryption, few PCs are likely to be compatible with Windows 8.1's feature. To support it, your PC needs to have ticked a list of not-very-common checkboxes: Secure Boot support, Trusted Platform Module 2.0, and Connected Standby (which has obscure requirements of its own).

If your PC supports all that, you'll find device encryption within the PC Settings section of the Settings charm.



How to find device encryption: Head to PC and devices, PC info. If your hardware gets the approval, you'll see a device-encryption option. (The PC we used for this screenshot doesn't, even though it has a high-end Ivy Bridge Core i5 CPU and an SSD. If it did, 'Device encryption' would be underneath 'Change product key')



How to share your connection: Open PC Settings in the Settings charm, then browse to Network, Connections. Select your mobile network, and slide 'Share this connection' to On

Broadband tethering

Windows 8.1's embrace of the mobile lifestyle extends beyond the touch-friendly Modern UI. If you're using a PC or tablet that includes mobile broadband - the Asus VivoTab with LTE, for example, or the Nokia Lumia 2520 - you can configure the device to function as a Wi-Fi hotspot and share your connection with up to 10 other devices. ☒

Get fit with tech kit

There are so many barriers to staying in shape, but technology is here to help. Martyn Casserly explores how smartphone apps, activity trackers, and even your games console can help get you fit and save money

It's always the same. You promise yourself that this year there won't be the normal descent into indulgence around Christmas.

Then, two weeks later, Mr Kipling has brought ruination, and it's time to sift through the rubble of your fitness. Take heart, though: just as Steve Austin discovered, we have the technology to rebuild you, and it shouldn't cost six million dollars.

Never before has it been possible to monitor so much of our daily activities in relation to fitness, health and nutrition. The smartphones in our pockets are capable of analysing our sleep patterns and measuring how far we walk, and can be one of the best tools in the quest to lose weight.

Specialised tech also brings a level of sophistication to our fitness endeavours that not only tells us how well we're doing, but can spur us on through game-style tasks and rewards.

In this feature we've picked our favourite fitness gadgets, which we've seen have an impact on real people, so that you can make the changes necessary to become the best you yet.





While many of us think the only way to get fit is to don the Lycra of punishment and hit the treadmill, this could all be in vain if we then tuck into a Mars bar on the way home from the gym. Diet is an important part of any fitness program and a healthier lifestyle in general. Sadly, the pace of modern living, and the proliferation of cheap snack foods, can make finding good dietary choices challenging when we're tired or in a hurry. One of the real issues is realising how many calories are in each foodstuff we consume. Thankfully, a few free apps can make this daily battle a lot easier.

MyFitnessPal (myfitnesspal.com) is an excellent free service that allows you to track your calorie intake via apps on your phone (all platforms) or online. You start off entering your height, weight and age, then set the target you want to achieve - say, to lose 12 pounds in 12 weeks. MyFitnessPal works out the amount of calories you can eat each day to reach your goal. You then keep a food diary using the app, which deducts each item you consume from your daily allowance. It's a little cumbersome at first, but after a couple of days you soon get into the swing, and the results can be very surprising. Having to

record each item you eat, and seeing the cost in calories, is shocking. The little things you never thought about suddenly become considered purchases.

You can record your weight each day and the app will track your progress; there's even a social aspect where you can see any friends who also use the service and encourage each other to hit your respective milestones.



Provided you're realistic about your goals, and remember to use the app each day, MyFitnessPal can help you shed pounds at a steady rate. It also works in collaboration with many of the activity-tracker devices on the market, so you'll build up a detailed picture of your diet and physical activities on a day-to-day basis.

Fooducate (fooducate.com) is another excellent choice, offering many of the same features but focusing on showing you exactly what's in the food you eat.

One of the first issues people run into when changing their diet is the simple confusion of what meals to eat. As part of its Change4Life programme the NHS has launched the Smart Recipes app for iOS and Android. It's packed with more than 100 recipe ideas and includes a meal planner.

The design is a little childish, but the content is very good. Each day you can select from the library of meals yourself or ask the app to randomly allocate recipes for breakfast, lunch and dinner. It then creates a shopping list of ingredients, which you can access on your phone in the supermarket.

You could also try Recipes & Nutrition on Android, or Mealboard on iOS.



SLEEP

Research shows that one in three people in the UK suffer poor sleep. The NHS reports that you're 30 percent more likely to be obese if you regularly sleep for less than seven hours per night. This lack of rest can also increase your chance of diabetes and heart disease, and may result in a reduced sex drive.

A great way to stay fit is to get your head down. Several apps can log the amount of time you've slept, plus monitor its quality by analysing your movements.

Sleep Cycle lets you use your iPhone to track your sleep patterns and has an alarm designed to wake you in your lightest sleep phase, which can make the morning chorus more inviting. Android users can find the same features in Sleep As Android or SleepBot. Alternatively, you can use activity trackers such as the Fitbit Flex.



POLAR RC3 GPS

Years ago the only mobile-fitness devices you could buy were a set of dumbbells or a Sony Walkman that played a particularly upbeat mixtape. Things have changed considerably: there is now an industry dedicated to improving your physique.

One device that has been around in various guises for a long time is the humble Pedometer, which tracks how many steps



FITNESS ON THE MOVE

FITBIT ZIP



you take each day. These can be picked up in sports shops for less than £20 and are a useful tool for encouraging you to take the stairs or walk rather than catch a bus. For a little more money there's also the Fitbit Zip (£39), which adds Bluetooth synching of your step totals to an app on your phone or PC.

If you like to run then a formidable range of options is open to you. Heart-rate monitors have been used by runners for many years, with models such as the Polar RC3 GPS (£249) now including advanced features that can help you maximise your sessions. GPS sensors allow the device to guide you along preordained routes, while also keeping a record of your pace and how long you stay in the optimised zone for your heart. There's even a feature that can guide you back to your start point if you get lost.

If you don't need all this information then try Polar's FT1 (£46), which is a more traditional heart-rate monitor in a sportswatch frame, designed for those just starting out on a fitness program.

Your smartphone also offers plenty of running apps, with several of our favourites from Runtastic. Its flagship app Runtastic Pro is available on iOS, Android, Windows Phone, and BlackBerry, delivering many of the same features of dedicated hardware. One we love is the ability to select a playlist for your run, which will introduce a power song (one you choose that drives you on) if you start to flag along the way, or even cheering you as you arrive at parts of your route. The company

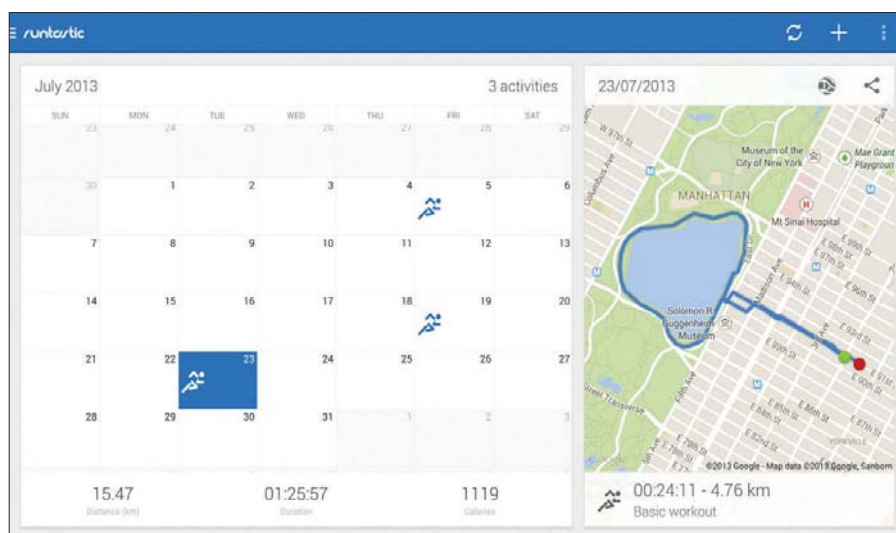
also offers mobile apps for cycling, mountain biking, walking, push-ups, and achieving that elusive six pack.

Whereas your phone can help you to achieve impressive results, you won't always want it tracking your GPS position - particularly if you hope to have any battery remaining by late afternoon. You could instead use a smartwatch such as the TomTom Multi-Sport GPS (£149), which does the tracking for you and then syncs with your PC when you launch the dedicated website.

If you don't need GPS tracking the Fitbit Flex is a simple device with no buttons or display, instead opting for a few small lights that flash to let you know when you've

achieved some of your daily goals (the forthcoming Force adds a display). In the Fitbit app you can set the amount of steps you wish to walk in a day (the World Health Organisation recommends 10,000) and how many calories you want to burn; it can also monitor your sleep patterns.

The Nike Fuelband SE (£129) offers many of the same features and a more aesthetic design. When linked to your iPhone it can set you challenges that make fitness feel more like a game than a grind, with any successes met with digital fanfare. It even tells the time, so it could replace your wristwatch. Android users should try the Jawbone Up (£99) or the Withings Pulse (£89).





The gym can be an intimidating place, not to mention expensive. Unless you live next door, you'll also have to get there, which gives you an excuse not to go. For a fitness regime to succeed it needs to have as few barriers as possible. After all, if we had amazing willpower we'd already be fit.

A programme also has to be varied and interesting to avoid the monotonous repetition of press-ups and squats with only a target number to drive you on. This is where games consoles come into their own. The Xbox Kinect, Playstation Move and Wii controller turn their respective machines into a personal gym, complete with personal trainer, and all in your living room.

Using motion-tracking technology and cameras on the Xbox Kinect, games such as *Your Shape: Fitness Evolved 2012*, *Nike+ Kinect Training* and *UFC Personal Trainer* can monitor your body to see whether you're keeping up with the various challenges in the games. It's a much easier – and safer – way to work out at home than using DVDs, with feedback in real time.

Most fitness games also lay out a plan for you to achieve goals within certain timeframes, and have social elements that allow you to compete against friends or even work out together. Having games built-in helps keep the motivation to train high. Rather than the solitary experience of a gym, where you need to keep your own records and in many cases devise your own training plan, the convenience of having this level of

personalised training in your home is truly a breakthrough in fitness. You still have to put in the hard yards yourself, but they can help you keep you pushing for the body you want.

If the gym simulation still leaves you cold, titles such as *Zumba Fitness*, *Dance Central 3* and *Just Dance 4* can also get you in great shape, provided as you don't mind shaking your tail feather. Working in a similar way to the fitness games, these require you to match the routines of the dancers onscreen. There are no gentle waltzes on these titles, though, and things can get rather sweaty. But you'll have great fun and look amazing on the dancefloor at the next work party.

The real advantage to these games is that, now that they've been around a little while, the combined cost of the console and game is less prohibitive – probably less than a years' membership at the gym. You don't need to be

a gamer to buy a console, just someone who wants to save money and get in shape. Plus, these devices take up very little room.

Plenty of traditional fitness apparatus are available, including rowing machines, advanced home fitness bikes such as the *Wahoo Kickr* (£949) and home gyms, but for the majority of people we think the console is the most cost- and space-efficient option.

That said, those with deeper pockets could invest in the new Xbox One (£429), which offers the Xbox Fitness service featuring workouts from fitness gurus Jillian Michaels, Shaun T and Tracy Anderson.

Of course, you'll want some decent scales to accurately measure your progress. The *Withings Body Analyser* (£130) can record your body fat, heart rate and even the air quality in the room, all of which is synched to the cloud and accessible via a mobile app.

One of the best things about the current riches of fitness technology is that most of it works in unison.

You can manage your diet and sleep patterns on your phone, record your console workout with a wristband, and then put it all together on a website.

Getting in shape still requires discipline, effort and persistence, but with this

information at your fingertips, and the incentivised thrill of regularly winning rewards along the way, it can seem a lot less like a hard slog.

Try the calorie app, or even splash out on a console. If you stick at it for two- to three months you'll see a marked improvement. You might not be bionic, but you'll feel like a million dollars. ☑

TOGETHER WE'RE STRONG



Battle of the browsers

Who has the best browser, Google, Microsoft, Mozilla, Opera or Apple?
Roland Waddilove tests all five and presents the results

Most web browsers are updated several times a year, so which one is the currently the fastest and most feature-packed? We installed the most popular options to discover what's changed over the past year.

Microsoft has gone from having around a 90 percent web browser market share to 55 percent or less, depending on whose statistics you read. The problem was that Internet Explorer stagnated and made little progress for years. Firefox and Opera were alternatives that some used, but even those progressed slowly. The browser market was lifeless until Google Chrome woke everyone up with not only the speediest browser around, but also an equally breakneck development cycle.

It led the way with performance and support for the latest web standards and other browsers have been trying to catch up ever since, with development teams working to produce new versions as fast as they can. Internet Explorer is up to 11, Firefox is now at version 26, Opera is on 18, while Safari seems to have given up. Of course, it isn't all about speed and if you are a die-hard Internet Explorer user, you should look at the features offered by other browsers because they can do things that aren't possible in IE.

All the browsers were tested in Windows 8.1 and several benchmarks were used to determine their performance, such as BMark, Octane 2, Peacekeeper, SunSpider and others. They highlight some significant differences between the browsers and some browsers have improved over the past year or two, while others haven't. Who's gained and who's lost? Let's take a look.

Apple Safari 5 for Windows



Apple appears to have thrown in the towel with Safari and has abandoned its Windows version. A few years ago when Internet Explorer and Firefox were stagnating, Apple saw an opportunity to grab the browser market and put its high quality software in front of Windows users, perhaps with ambitions of tempting them to switch to Macs. The company brought out Safari for Windows, which was far superior to IE and Firefox (although Firefox had the advantage of a huge library of extensions). Things didn't quite work out as Apple wanted, though. Google launched Chrome, which offered even greater performance benefits, while Firefox's developers shifted into top gear and increased development and shortened release times. Safari was left behind.

The latest version is dated May 2012, which makes it nearly two years old, and this is reflected in the performance figures in benchmark tests. In a nutshell, it came last. Safari wasn't just slightly slower than its rivals either - it was a lot slower, often running at one quarter to one third the speed of rivals. Even Internet Explorer can beat it. It didn't complete all the tests and a couple were skipped because they were unsupported.

Safari 5 is basically 2011 technology and in its day it was an excellent web browser, competing on equal terms with its rivals. Surprisingly, it has quite a modern look to it and design-wise it's great (as you would expect). Although a traditional menu bar at the top of the window is available, it's hidden by default. The Favorites bar with bookmarks can be hidden, too, and this increases the space for displaying web pages and reduces the clutter. Extensions are available and an option on the menu takes you to the online gallery. Although there are dozens available,



the gallery is smaller than the hundreds available for Firefox, Chrome and Opera.

A nice feature is the Reading List, which is similar to Opera's Stash. Web pages you don't have time to read can be added to the Reading List and returned to later. It's like an alternative bookmark facility, but it stores icons and descriptive titles that are more helpful. Beyond that, there isn't much to say.

Essentially, if you have Safari on your PC you should uninstall it and immediately switch to a more modern browser. Just about any alternative is better than Safari for Windows, and it has few of the great features that are in Safari for the Mac, such as syncing browsing data between computers and with iPads and iPhones. Indeed, in iCloud Control Panel 3.0 for Windows, there's no longer support for syncing Safari bookmarks. Farewell, Safari for Windows.

Google Chrome 31

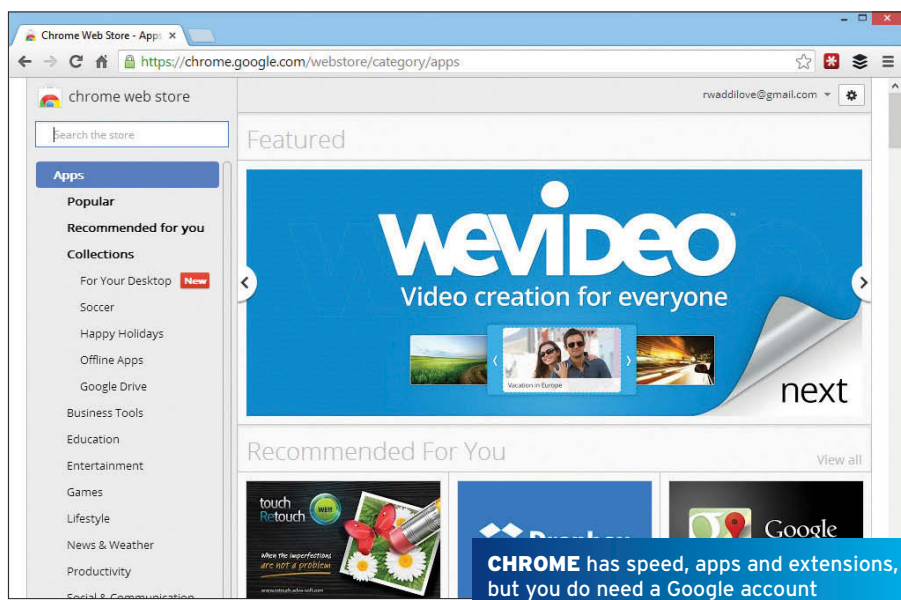


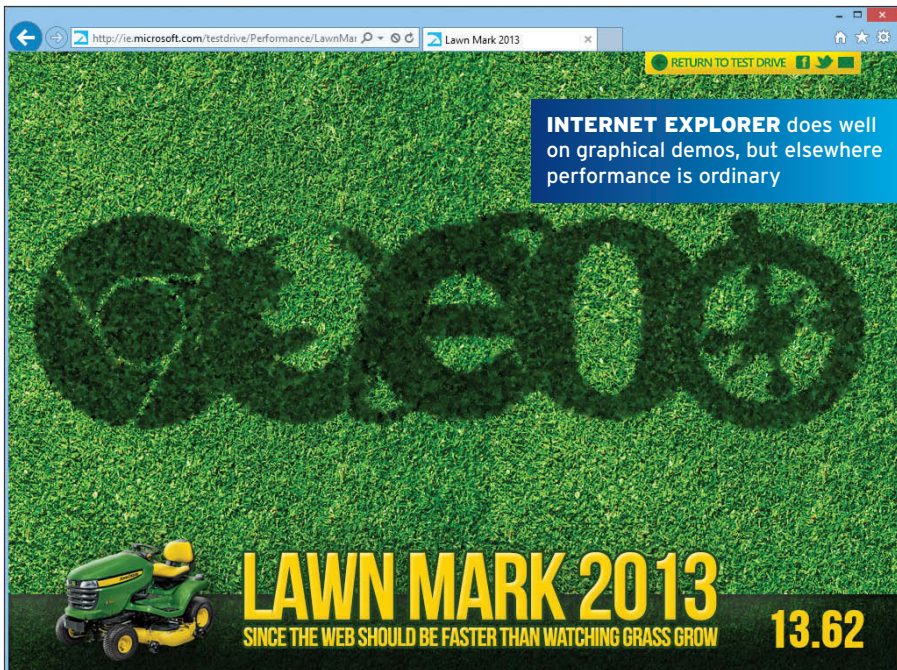
When Google launched Chrome in 2008, it stirred up the web browser market. It had a minimal set of features and was really basic, but it had two things going for it - it was very fast and was compatible with modern web standards. It's now up to version 31, but the number is irrelevant and it's hard to tell the difference between this and version 21. The majority of changes aren't immediately obvious and they are mostly tweaks to the speed and capabilities of the engine that powers the browser.

Chrome was the fastest web browser when it launched and that's still the case. No other option comes close, apart from Opera and that uses the Chrome engine, so it's not surprising. Not only is Google's offering fast, but it runs on XP and Vista, which Microsoft no longer supports. If you're still running one of these older operating systems, this browser is essential. Otherwise you'll have endless problems with slow surfing and even websites no longer working properly because they require features not supported in IE8 and 9 on XP and Vista.

It's hard to list recent changes in Chrome without getting technical. Some are aimed at developers and others aren't visual. However, these updates include notifications of new Gmail and a reset button in advanced settings to restore factory settings.

If you're a Google fan, Chrome has some great features and is designed to make the most of the company's services such as Gmail, Calendar and its online office suite. For example, it automatically syncs browsing data across computers, tablets and phones. Extensions installed on one computer





installing freeware software. Although the other browsers here have extensions, they don't suffer from the same problems.

It's difficult to make sense of Internet Explorer's performance benchmarks. In many tests IE lags behind other browsers (Safari excepted), sometimes by a wide margin. Yet if you go to the IE Test Drive (ie.microsoft.com/testdrive/), it blows away all competitors with its performance. Take those Test Drive results with a large pinch of salt. Microsoft has written them in such a way as to let Internet Explorer run at full speed, while limiting the performance of the competition. When the code is tweaked to allow Chrome to run at full speed, it runs just as fast.

Microsoft has clearly improved Internet Explorer enormously over recent years and the difference between IE8 on XP and IE11 on Windows 7/8 is huge. It still has some catching up to do and while the test Drive demos look good, JavaScript performance isn't so hot. Overall it was rated as fourth fastest, but it beat Firefox on some tests.

Mozilla Firefox 26



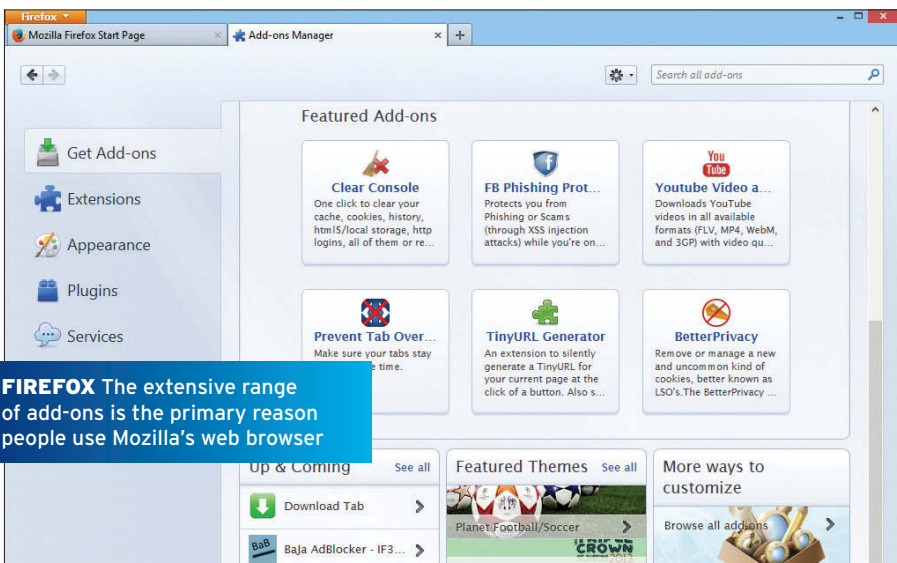
Firefox is around a decade old and before Chrome came along in 2008 it was doing quite nicely. Internet Explorer development had stalled and early versions of Firefox offered an alternative that was stable, fast, and offered features that weren't in IE, such as an extensive range of add-ons. Development of Firefox was slow until Chrome came along with its fast update cycle, which kick-started Firefox's development and updates are now more frequent.

Mozilla's browser has always been slower than Chrome, but faster than IE, sitting somewhere in the middle. Its performance has been good, but rarely the best. Of the five browsers on test here, Firefox is bang in the middle again. It's a solid browser that performs well, but Chrome has equalled it or overtaken it in market share, depending on whose statistics you look at.

Its main advantage in the early days was the large range of extensions, but today there are just as many for Chrome and because this is faster, it's hard to recommend Firefox.

Firefox has always been more customisable than other browsers and typing **about:config** into the address box provides access to a large number of settings. There are developer and technical changes, too.

An interesting feature of Firefox is the custom start page. It has a Google search box, while down at the bottom is a row of buttons that provide access to common features including downloads, bookmarks, add-ons and settings. Firefox Sync enables you to synchronise browsing data like bookmarks between computers and devices.



automatically install on others you use, even if it's a Mac. Flash is built in, so you don't need it installed in Windows, and plug-ins can be click-to-play, which is great for blocking unwanted content. The range of extensions is excellent, too, and rivals those of Firefox. There are also web apps and the Chrome Web Store is a great place to find games, office apps and tools. Shortcuts to the apps are added to an app launcher button on the taskbar that displays a pop-up panel.

It's a superb browser, but you have to love Google and use its services to make the most of it. If you don't, use Opera instead.

Microsoft Internet Explorer 11

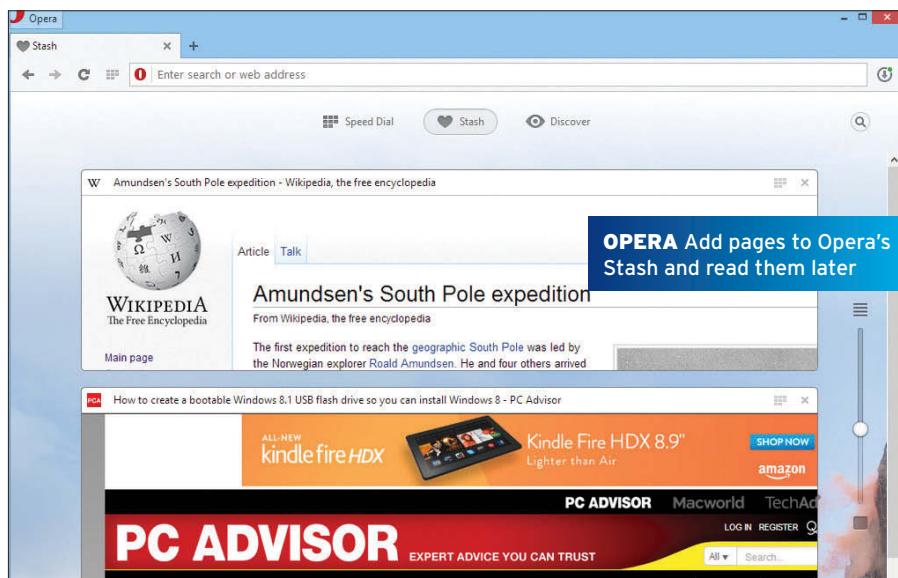


Microsoft's web browser situation is a mess. One problem is that there are still a significant number of people running

Windows XP. The most recent version of Internet Explorer for XP is IE8 and that's an awful browser - it doesn't support modern web standards and is slow. There aren't many Vista users, but those that still have it are limited to IE9, which isn't recommended. It's only Windows 7 and 8 users that can install and run the latest version. In contrast, Chrome, Firefox, Safari and Opera work on any version of Windows.

Internet Explorer has a compatibility view and this enables it to access websites that are incompatible and don't display correctly. It loads a web page as if it were an older version of IE. Is this an admission that it doesn't work properly? None of the other browsers need a compatibility mode and they work fine without it.

It's also a target for toolbars and extensions that bloat the browser and make it slow. You have to be wary of these when



It's a useful feature, but Google does this better than anyone else. Firefox requires you to pair devices by typing in codes whereas with Google you just sign in.

Firefox has a clean interface with minimal distractions and if you need menus, then the Firefox button is where to find them. Select Add-ons and you get access to a very nice add-ons gallery. It says three-and-a-half billion have been downloaded and it's the browser's best feature. Is it worth sacrificing a bit of performance for add-ons? Many people think so and that's why Firefox has such a large market share. It's an average performer with above average add-ons.

Opera 18



Opera is nearly 20 years old, yet in all that time it's struggled to build a market share percentage that couldn't be counted on your thumbs. The company has tried everything to make its browser more appealing and at one time it was the most feature-packed browser available. The problem is that few people cared. Opera has tried filling toolbars and panels with buttons and functions, it has tried creating widgets that run in the desktop outside of the browser, and peer-to-peer networking with sharing built in. Nothing has worked. This is partly because other browsers offered more speed or more add-ons or both.

With Opera 18, a lot of the clutter and features that were packed into previous versions have been removed and it now has a clean and simple user interface - a single blue bar at the top, with an Opera button in the top-left corner and a minimum of buttons either side of the address box.

It seems that Opera has taken a leaf out of Chrome's book and simply gone for speed, web standards and simplicity. Actually, it has done more than copied Chrome, it is

Chrome. This version of Opera is based on the Chromium open source browser project, which is the also the basis for Google's browser. This is the obvious explanation for the near identical performance figures in benchmarks. Opera is a tad slower in some tests, but slightly faster in others. The difference between the two is so slight you won't notice it.

There are hundreds of extensions to choose from and the range and quality is excellent. There's an interesting Off-Road mode that compresses internet traffic to reduce the bandwidth used and to speed up browsing on slow connections. This could be useful to people with laptops perhaps using their phone as a Wi-Fi hotspot to get online. A Synchronise facility enables browsing data such as bookmarks and other information to be synced across computers and devices. At the right of the address box is a heart and clicking it adds the current web page to the Stash. This is a place where pages can be stored and read later when you have more time. Speed Dial displays favourite websites making them quick and easy to access.

Opera 18 is perfect for people that want Chrome's performance, but don't want a Google account.

Conclusion

Chrome and Opera share the best browser spot because they are the fastest, they support the latest web standards, and have lots of extensions that add extra features. Chrome is best if you have a Google account, but if you don't then Opera is fine. Firefox and Internet Explorer are okay and offer similar performance, but Firefox has the advantage of having a large library of add-ons and it works with old versions of Windows. Internet Explorer on Windows 7/8 is much improved and if add-ons aren't important, it's as good as, and perhaps better than Firefox. ☒

MOBILE BROWSING

Just as there are many browsers for desktop computers, there is also a range of browsers for tablets and smartphones, too. There are two main operating systems and these are Apple's iOS and Google's Android.

If you have an iPhone or iPad, the only browser worth considering if performance is important is Safari. The problem is that Apple does not let other browser developers use their own page rendering engine. Apple provides one for third-party browsers to use, which limits them to skinning it with their own menus and buttons. It gets worse. Third-party browsers are restricted to a less powerful version of the Safari engine.

Another limitation is that there's no way to change the default browser and it must be Safari. So if you tap a link in an email on an iPad or iPhone it will always open in Safari. The restrictions placed on third-party browsers is offset by benefits such as being able to log in to your Google account in Chrome. This syncs bookmarks, browsing history, and even tabs. You can see what you were last looking at on the PC and open the page in Chrome on the iPad or iPhone. This can be useful and because websites often serve up mobile versions of their sites, the slower speed of Chrome isn't as noticeable as you might expect.

Opera Mini partially solves the speed problem by routing internet traffic through its servers so it can compress it. This enables pages to load and display faster on your phone when there's limited bandwidth.

Android doesn't impose the restrictions iOS does and there are some good alternatives to Chrome, which is usually bundled with Android. Opera, for example, has two browsers for Android - the regular Opera and Opera Mini.

Dolphin Browser is worth considering if you want an alternative to Chrome. Mobile browsers generally don't support extensions but Dolphin does, so you can add extra features that aren't in the stock browser. It isn't as fast as Chrome or Opera when running benchmarks, but it has a lot of great features.



Best free VPN services

Disguising your online identity and providing additional security is becoming increasingly popular. Mike Bedford puts a selection of free VPN services through their paces to find the best

A VPN is a virtual private network. Using this approach to browse the web or download files means you can be connected to a remote network or server via the internet, just as if you were sitting in the same room and directly connected. At one time VPNs were used only by businesses but, with the proliferation of providers, there are now benefits for everyone.

If your employer operates a VPN, you'll be provided with software that lets you connect to the company network when you're at home or travelling. This will provide you with secure access to documents on the network and, because you'll inherit its IP address, you'll appear to be part of that network to the outside world.

An alternative approach - designed for a quite different application - is the provision of third-party VPN services.

Companies offering this type of service provide software that allows you to connect to one of their servers. This disguises your identity and might also make you appear to be in another country, which can be useful if you want to access websites that are accessible only in certain geographical areas.

For example, because BBC iPlayer is available only in the UK, using a VPN service lets you access the service from abroad. To provide the necessary security most VPN services also offer encryption, which will give you additional peace of mind, such as while you're engaged in financial transactions. To learn more about the benefits on offer, take a look at tinyurl.com/k8m7qru.

Here we'll look at a selection of free VPN service providers to discover whether any stand out from the rest.

Test philosophy

Because even free VPN services can offer so much functionality, we've discounted any products for which you will incur a fee when drawing up our shortlist. This doesn't mean paying for a VPN service is a waste of money, but if you're just starting out with VPN we suggest you try a free service first. Only then will you be in a position to decide whether the additional features you get with a paid-for subscription are worth the cost.

Even though using a VPN service may represent no financial outlay, there could be a hidden cost. That cost is a possible reduction in the effective speed of your broadband connection. This will either be because you're sharing bandwidth on the service provider's servers with other users, or because it is throttling back the throughput to encourage you to invest in one of its subscription services.

We used speedtest.net to measure the speed of each VPN service examined here. Note that our reported speeds are just snapshots taken at the time of testing: we would probably have achieved different results at various times of the day, although we don't believe that a result averaged over the day would have provided a particularly useful comparison. After all, the speed you could achieve will also depend on which server you choose and whether you're connecting to a foreign server from within the UK or vice versa.

Note that the reported speeds are measured between the speed-check website and the VPN service provider's server, so the speed you'll receive is the lower of this reported speed and your normal speed. For example, with one of the services we achieved a reported speed of 12Mb/s, but if your own broadband speed maxes out at 7Mb/s then that's what you'll get.

Also note that we've reported only download speeds, since the upload speed was reasonably constant at around 0.35Mb/s for each of the services in our round-up.



The latency of the connection - that is the delay before data starts appearing once you've requested it - will also be affected. For web browsing this will be only a minor issue, and for large downloads it's largely irrelevant. However, the increased latency caused by using a VPN service will have a major effect on Skype-type applications and online gaming; in these instances, using a VPN isn't recommended. Because of the inevitability of this, we haven't published any latency measurements.

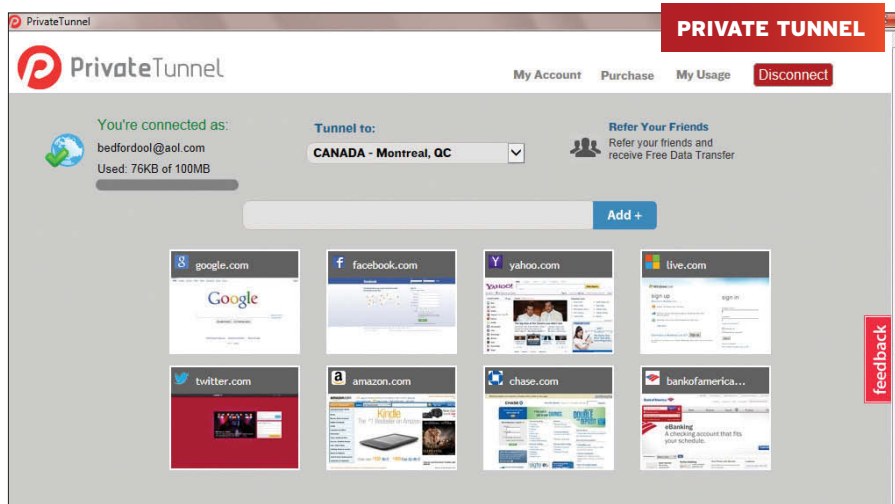
There are several other aspects that differ from one VPN service to another. Perhaps the most important is whether you're allowed to choose the country in which you'll appear to be located and, if so, which countries are available. Second, and this is particularly pertinent in the case of free services, we looked at what limitations are imposed. This may be on the amount of data you can use in a month or the maximum bandwidth. There might also be limits on how long you can remain connected and whether you have to endure advertising.

HotSpot Shield

hotspotshield.com

HotSpot Shield is one of the most popular free VPN services, but the restrictions compared to its subscription service are severe. First, the free version is funded by advertising and, although this isn't uncommon, many users find the display of advertisements in their browser obtrusive. Second, and most importantly, although the company also has servers in the UK, Australia and Japan, as a free user you're assigned to one of its US-based servers at random. This means you can't use it to access UK-only information while you're abroad. Worse still, if you try to use it to access sites such as Hulu that are available only in the US, many such sites are blocked by the free service.

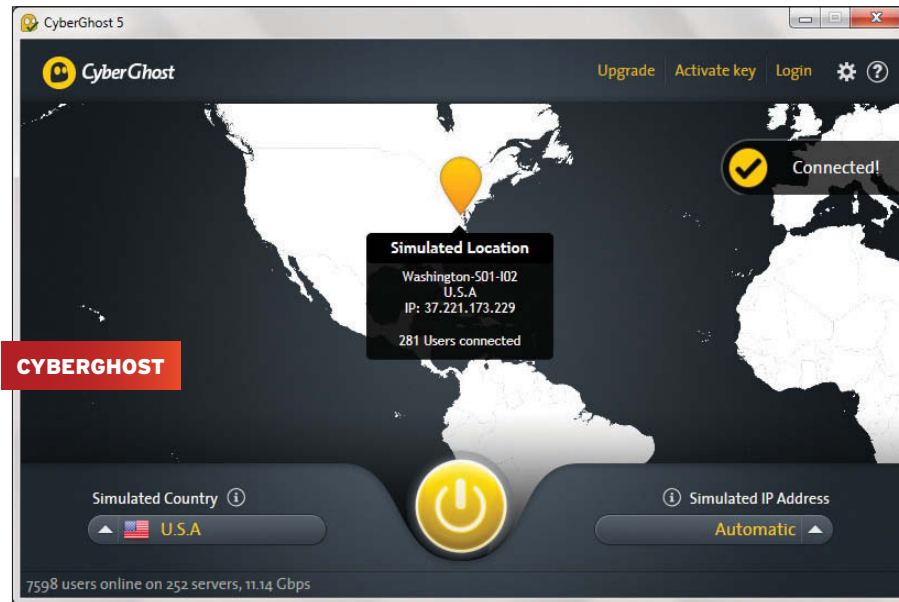
It's not all bad news, though, and if your main reason for using a VPN is anonymity and security, most of these drawbacks won't concern you. You'll be pleased to hear there is no limit on data usage and you don't even have to register to use the service. Our measured download speed was 6.5Mb/s.



Private Tunnel

privatetunnel.com

In contrast to most of the other VPN service providers that offer a free service and one or more paid-for alternatives, Private Tunnel has just the one product offering. This attracts no monthly fee, although you are limited to using just 100MB of data each month. When you bear in mind that this would be considered a very small monthly allowance for a smartphone, you get an idea of how restrictive it would be for a desktop or laptop. To go beyond this data cap you have to subscribe to the 50-, 100- or 500GB service. Because charging is based purely on data use, there is no limit to the number of devices you can use.



Currently you can choose a server in the US, Canada, UK, Netherlands or Switzerland. While this is limited compared to some other VPN services, in practice it'll be adequate for most British readers, whatever your reason for going the VPN route. We measured a download throughput of around 10Mb/s.

CyberGhost

cyberghostvpn.com

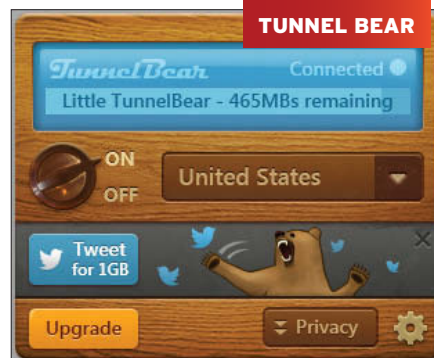
Like many of the free VPNs here, CyberGhost pays for itself by displaying infrequent adverts. The company has servers in the UK and US, plus many European countries stretching east to as far as Russia and Ukraine. As a user of the free service you can choose all but a handful of the European locations, reducing your choice of countries from 24 to 21, although the number of available servers is reduced significantly, from 253 to 20.

There are several other significant ways in which you'll feel disadvantaged with the free product. First, the bandwidth available to free users is limited, so you may be told that your selected server is not available and, even if it is, you'll have to wait for 60 seconds before you're connected. Then, when you are connected, you'll be logged out after three hours of browsing, although you can try to log in again immediately. Finally, the bandwidth is supposedly limited to 1Mb/s. We did better, measuring a download speed of 4Mb/s, but it would be wise not to expect this level of performance.

Tunnel Bear

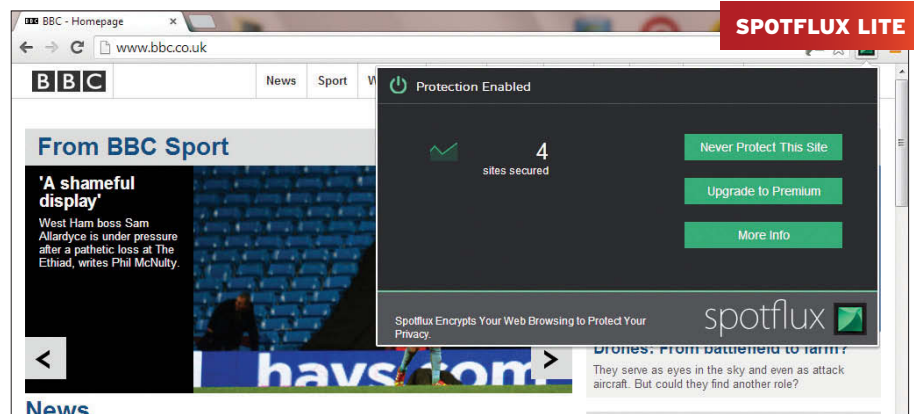
tunnelbear.com

The name of Tunnel Bear relates to the common analogy of a VPN as being like a tunnel through the internet from your PC to a remote network or server. The relevance of the bear, and of the log cabin theme of



the client software, are more of a mystery. Tunnel Bear operates servers in the US, UK, Canada, Germany, France and Japan, plus there's also one in Australia that is reserved for paid customers.

The differences between the free- and subscription services are mostly concerned with your data allocation. The free service gives you 500MB per month, although you can request an increase to 1GB via Twitter. Apparently, bear-related puns increase your chances of success. Beyond this you can pay monthly or annually for unlimited data. This option also allows you to use the service on additional handheld devices.



In our tests we recorded a very respectable download speed of 12Mb/s.

Spotflux Lite

spotflux.com/chrome.php

Although Spotflux offers solutions that involve the use of a VPN client on your PC, Spotflux Lite differs from the other services here in that it acts as a browser add-on. This means it'll operate when you're browsing, but not in other internet-related applications, including Skype for which the VPN approach isn't recommended. As a result you don't have to turn on and off your VPN connection as you switch between applications.

Unfortunately, Spotflux Lite is currently available only for Google Chrome. If this doesn't happen to be your preferred browser, it's tough luck.

Being tied into a single browser isn't the only way in which Spotflux Lite limits your choices. The company offers servers only in the US, although there is talk of other countries being made available. If security is your reason for considering a VPN then Spotflux Lite will do the trick, but if you want to watch catch-up TV from abroad it won't meet your needs. Our measured download speed was a somewhat mediocre 6.5Mb/s.

The bottom line

In attempting to choose the best free VPN service, it soon became clear that all have their drawbacks. Although impressive in other respects, you're soon going to use up the free data allowance with either Private Tunnel or Tunnel Bear and end up paying for the service. Of the genuinely free services, Spotflux Lite is usable only with Google Chrome, you can't choose the server location, and its speed is rather lacklustre.

Hotspot Shield tries to force you into buying a subscription service and offers only a US-based server (and inundates you with advertising). CyberGhost imposes delays when you connect and throttles back your download speed rather considerably. If you don't need a high-speed connection, though, in most other respects it's a good free VPN and would be our first choice. ☒



YOUR QUESTIONS ANSWERED

Expert computing advice

We tackle readers' hardware and software conundrums

HI-RES IMAGES ON A LUMIA 1020

Q I recently purchased a Nokia Lumia 1020 smartphone (tinyurl.com/kxclsng). Part of the reason for doing so was its 41Mp camera, however, I don't seem to be able to access any of its high resolution images. I have it set up to shoot in the highest resolution mode, which says 'JPEG (5 MP) + (38 MP)', but whenever I attempt to share any of my pictures, I can only gain access to the 5Mp versions. How can I open my high resolution photos?

Presumably your Nokia Lumia 1020 is hiding the high resolution images to protect you from massive uploads and downloads. They are, however, saved alongside the smaller photos in the same folder on the phone's built-in storage. To access them, you'll first need to hook up your phone to a computer using a USB cable. If you're using Windows 8 or later this will launch the Windows Phone app and display all your stored images. Unfortunately, this won't show your high resolution pictures either.

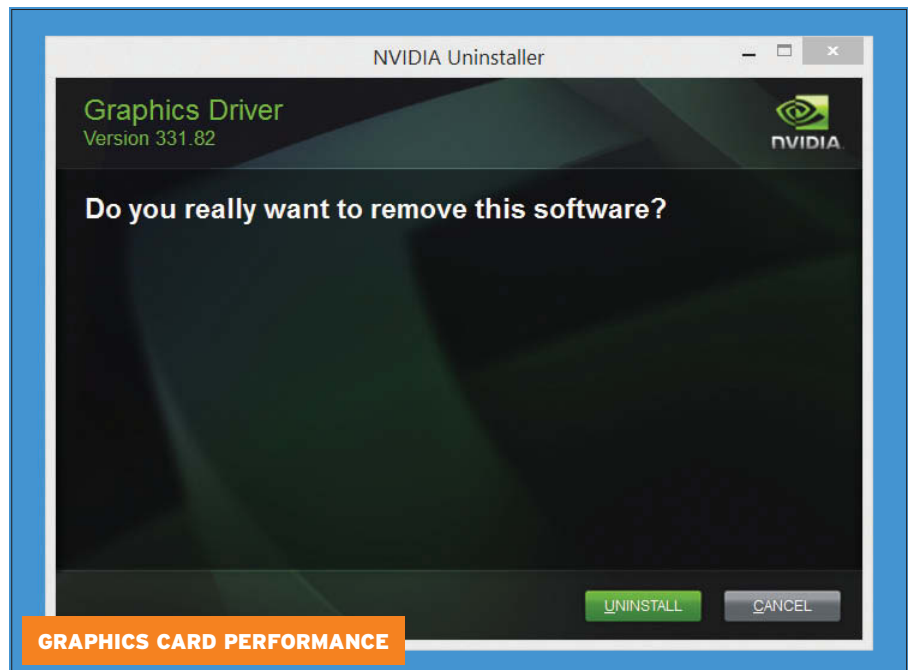
To access these, you'll need to open a File Explorer window from the Windows desktop. The Nokia Lumia 1020 should show up as a device under 'This PC'. Double-click on the icon for your phone and navigate to Phone > Pictures > Camera Roll.

Here you'll find the 5Mp images alongside the 38Mp versions that contain 'highres' in the filename. You can copy these on to your PC for editing.

GRAPHICS CARD PERFORMANCE

Q Gaming performance is slower than I'd expect when using my new nVidia GeForce GTX 780? At the moment, my monitor is connected to one of the ports on the computer's motherboard rather than the graphics card itself. Does it matter which HDMI socket I use? I tried moving the connection over to the graphics card, but it didn't improve matters. It's still much better than integrated graphics performance, so I'm sure the computer is using the graphics card rather than the CPU's built-in graphics.

Can you suggest a solution?



If you want to achieve the maximum performance from your graphics card, it's important to plug your monitor directly into the card and not via any video ports on your PC's motherboard. The GeForce card will co-operate with your CPU's integrated graphics, and this is how output from your graphics card is able to emerge via the motherboard, but there's a performance penalty in doing so. It also means that you'll probably have drivers for both the nVidia card and the integrated Intel graphics installed at the same time.

If you're not using integrated graphics, it's a good idea to disable it altogether. This will be an option in your EFI or BIOS settings and the exact steps will vary depending on the motherboard you have, so check your documentation.

After this, you'll need to uninstall the Intel graphics drivers as well as the nVidia drivers, then reinstall the latest nVidia drivers from scratch.

We've seen performance actually get worse after removing the Intel drivers while leaving the nVidia drivers in place. This is rectified when the drivers are cleanly reinstalled without the integrated graphics being enabled.

After this, you should see a noticeable increase in performance, in line with what you were expecting.



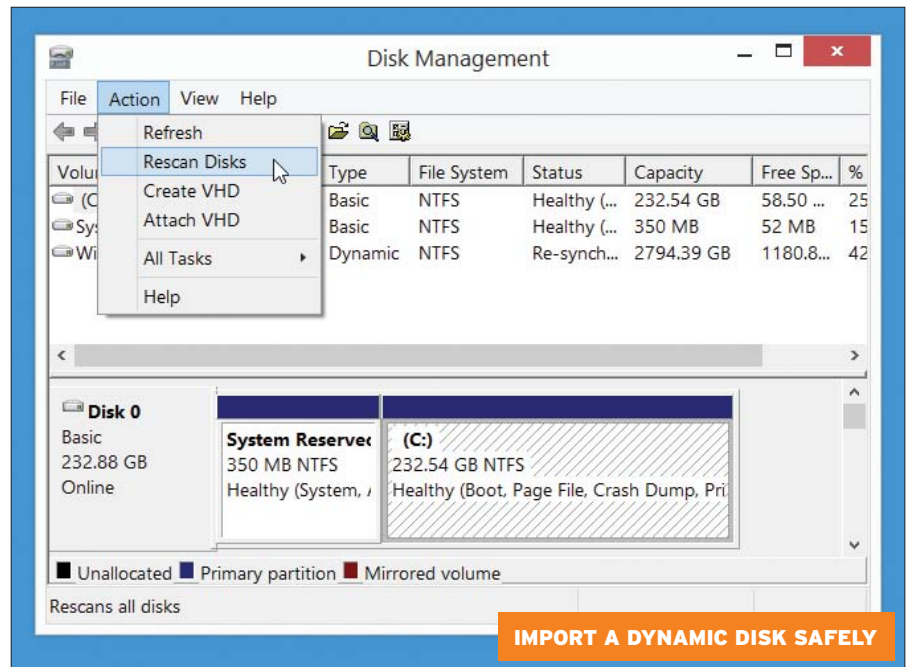
IMPORT A DYNAMIC DISK SAFELY

Q I've inherited a dynamic disk from a computer that no longer works. If I import this, will I be able to see the data? The contents are very important to me, so could you explain the steps that I need to take?

All being well, you should be able to import the disk and its contents without problems. To maximise the chances of a trouble-free import, it's best to uninstall the disk cleanly from Windows on the old computer first. We appreciate that you may not be in a position to do this as you say the original PC no longer works, but if you're able to get it to boot at all, it's best to verify the health of the disk before moving it.

As an extra precaution, you could make an image backup of the disk before you start, using a tool such as MiniTool Partition Wizard (partitionwizard.com) or any such utility that's able to handle dynamic disks.

Open Computer Management, then Disk Management from inside the Administrative Tools section of the Control Panel. Check the status of the disk and make sure it's shown as 'Healthy'. If not, repair the disk. Now,



from inside Disk Management, right-click on the disk you want to uninstall and select Remove Disk. Ensure all associated disks are moved at the same time, as dynamic disks

are often part of a multi-disk set used for RAID or spanning purposes. You won't be able to move just one disk from such a set and bring it online on your new PC.

Continues >>

GET THE STANDARD ANDROID LOOK ON ANDROID PHONE

Unless you've purchased one of Google's own-brand Nexus devices, your Android phone probably comes with a heavily customised look and feel determined by the phone's vendor.

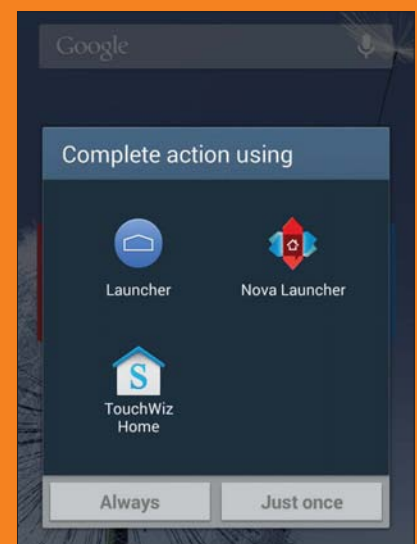
Whether it be Samsung's 'TouchWiz', HTC's 'Sense' or one of many others, you may prefer to opt for Google's own Google Experience Launcher instead, which brings with it 'Google Now' voice activated technology directly from your home screen. This method will allow you to do so, provided your handset is running Android 4.1 or later and you're prepared to run an app from an "unknown" source.

The code to do this is contained within the latest versions of Google's Search app, which can be downloaded from the Google Play store, though, you'll need a small

additional app to activate the feature that enables it to run as your main user interface.

You'll need to install the latest version of Google Search from the Play store and then download this small launcher app, made available by androidpolice.com here: tinyurl.com/lab2dud. Now install the app. You may need to specifically allow it to run by adjusting the security settings on your phone. Now tap the home button, which should bring up a selection of available Launcher apps. Select the Google Experience Launcher (named 'Launcher', with the words 'Google Search' underneath) and choose 'Just once' to give it a quick try or 'Always' to use it as your default launcher.

Uninstalling the app, will give you back the option to return to your original launcher if you wish.



When you plug the disk or disks into the new computer, it will hopefully trigger the 'Found New Hardware' dialog box to appear. Follow any instructions that are shown. Next, go once again to Disk Management. Click on the Action menu at the top and select Rescan Disks. Your new disk will probably appear marked as Foreign. Right-click it and select Import Foreign Disks.

This should successfully mount the disk in your new PC, along with the data stored on it. If problems are encountered with your disk, Disk Management will alert you of the likely outcome before you attempt to import it. The drive letter assigned to the disk will usually be the same as the one assigned it on the old computer, although this will change if that drive letter is already in use on the new system. If the disk wasn't assigned a drive letter on the old PC, it won't be given one on the new one either, so you may need to assign one yourself.

PASSWORD SPIES

Q When I'm using my web browser and start to type the password for an email account, for example, a symbol appears at the end of the password field that I can only describe as an eye. If I click on it, the password's characters can be seen. Is this some sort of malicious spyware? I've carried out a full virus scan, which says that my computer is clean and that it's protected. What do you think is going on?

You may or may not have someone spying on your passwords, but the effect you describe is certainly no evidence of that. It is in fact a new feature in Internet Explorer 10 that lets you check what you've typed by clicking on the eye before you submit the password. You'll also find the feature in use throughout Windows 8 or later. It should pose no security threat, as long as you don't leave your password typed in without submitting it and walk away from your PC.

OPTIONROM ERROR

Q I've upgraded my PC recently with a new motherboard and installed Windows 8.1. It supports UEFI firmware, so I decided to take advantage of the fast startup capabilities and installed the operating system in UEFI mode.

Windows boots just fine, but every time I see the error message 'OptionRom Authenticate fail' at the top of the display. Furthermore, the initial startup screen only appears if I have the monitor plugged into the integrated graphics adaptor on the motherboard. Windows itself then starts up on the display plugged into my graphics card.



If I disable the UEFI boot and switch to legacy mode, the error message doesn't appear, but now Windows 8.1 won't boot. I can use Windows 8.1 as things are, but it's annoying having to swap the monitor over to the motherboard connector to get into the UEFI settings. Can you explain what's happening?

The 'OptionRom' error message shows that, unfortunately, your graphics card isn't compatible with UEFI booting. This is the case with many older graphics cards that were released before support for the feature was available.

In some cases, you may be able to obtain a firmware upgrade, called a VBIOS, which will enable the card to boot successfully in UEFI mode, so you may have luck going back to your graphics card vendor and asking if an update is available.

ICON POSITIONS

Q I have two laptops - an HP and a Lenovo. The first of these runs Windows 7 64-bit, while the Lenovo is running Windows 8.1 64-bit.

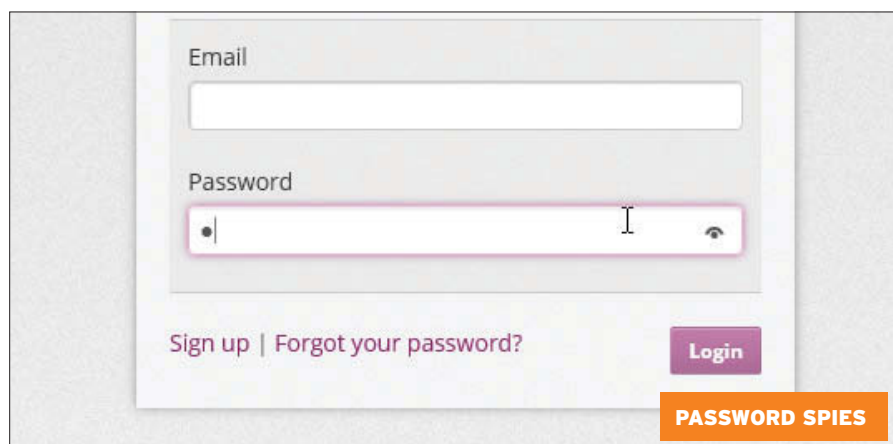
I've always found that when I connect an external monitor or projector and reset the screen resolution to 1024x768, all the shortcut icons rearrange themselves on the internal screen.

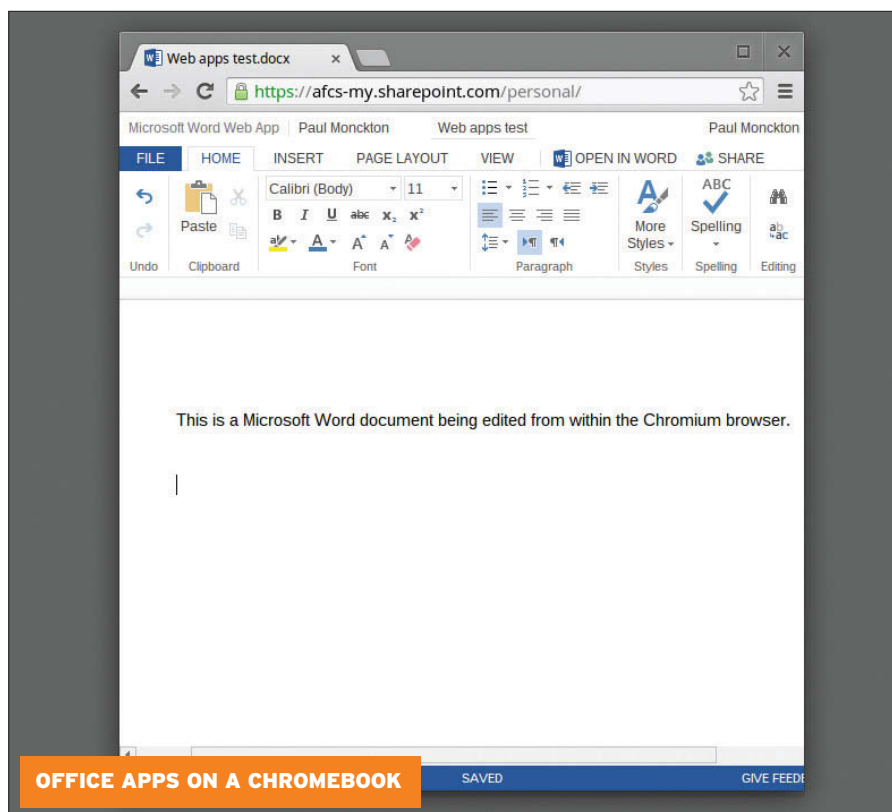
What annoys me is that having disconnected the external display and reset the internal screen to its original higher resolution, the shortcuts remain in their new positions - columns down the left side of the screen.

Is there any way of making them return to my chosen positions? I like to have all PC-related icons on the left, my Microsoft Office ones in the top right, photographic applications down the bottom-right corner, and one or two others dotted about for Outlook, Roxio CD burning, and so on.

If not, then I guess I will have to put up with it - I had the same problem when running Windows XP.

There's a small utility called IconRestorer designed to do this. A freeware version is available from tinyurl.com/qmuctl, which will do exactly what you want. You can arrange your icons as you wish and then





click the 'Save current desktop layout' button to record their positions. You can type a note to go along with the layout to help you manage multiple layouts.

It also has the option to restore your icon layout automatically whenever your screen resolution changes. This should mean that when you unplug your external display, your original icon layout will be restored for you. A paid-for version is also available, which adds extra features, such

as automatically saving your layouts for you and repairing the Windows icon cache, should it become corrupted.

OFFICE APPS ON A CHROMEBOOK

Q I bought *PC Advisor* recently as I'm looking to purchase a computer or laptop. I don't own a tablet, as they don't support Microsoft Office or have the ability to make phone calls. I've used PCs before at work and in internet cafés

mostly for email, Office applications and general web surfing.

My PC knowledge is rather basic, but I would like to buy a machine that lasts a few years and that lets me improve my computing skills. I would like to do a lot of writing, and after looking into what is currently available I decided to opt for the Dell XPS 12. I would have gone for an Apple MacBook, but they don't have touchscreens.

Then I came across references online to Google Chromebooks. These mentioned how reliable the devices are and that they should last for a long time. Apart from the fact that they don't have Microsoft Office they sound ideal.

My shortlist is now between the Dell XPS 12 and a Chromebook. Which one do you think is best for me?

These are two very different devices, and the best choice for you will depend almost entirely on your expected usage.

The Dell XPS 12 (tinyurl.com/qbawklc) runs a full copy of Windows 8.1 and will do everything you would expect from a PC, running any Windows applications you like – including Microsoft Office.

The Chromebook Pixel (tinyurl.com/ksguul3) on the other hand is a far simpler device, which relies very much on accessing the cloud both for storage and for most applications. You can't install Office on a Chromebook, but if you purchase an Office 365 subscription, you can sign in from your Chromebook and use the Office Web apps.

The obvious alternative to Microsoft Office on the Chromebook is to use Google Docs (docs.google.com) instead.

Continues >>

TECH JARGON BUSTER

4K MONITOR: This is a monitor that's capable of displaying ultra-high definition content at a resolution of roughly 4000 pixels horizontally. Although actual resolutions may vary, the most common is 3840x2160 pixels, which is the equivalent resolution of four 'Full HD' screens arranged in a 2x2 rectangle.

CHROMEBOOK: A Chromebook is a notebook computer running Google's Chrome OS operating system. Relying heavily on the cloud computing model, these PCs are designed to be used while connected to the internet, with almost all functions carried out via the Chrome browser rather than installing traditional applications, although some offline functionality is available.

CMOS BATTERY: Used to maintain the settings stored in your PC's BIOS or UEFI setup, such as the date and time, a CMOS battery usually resembles a 5p piece. It can be found installed in your PC's motherboard.

OPERATING SYSTEM: This is the software that talks directly to a PC's hardware and provides an environment for applications to be run on it. It manages resources such as memory, and access to devices including hard drives and keyboards. Common operating systems include Microsoft Windows and Mac OS X.

PARTITION DISK: A disk partition divides a single hard disk into multiple logical pieces, each of which can function as

though it were a separate disk. They can be used for organisational reasons or to allow different file systems or operating systems to be installed on one hard disk.

RAW IMAGE FILES: These can be created by high-end and enthusiast cameras and certain Nokia Lumia smartphones. They contain picture data taken directly from the image sensor in the camera prior to conversion to the more compact JPEG format. As such, they contain more picture information and can allow for higher-quality images to be processed later on your computer. They also require specialised software to process them and take up considerably more disk space. The actual format of the data is often unique to the specific model of camera used.

This is compatible with most Microsoft Office files, and although far less sophisticated, it provides most of the core functions you're likely to need.

GOOGLE CAN'T HEAR ME

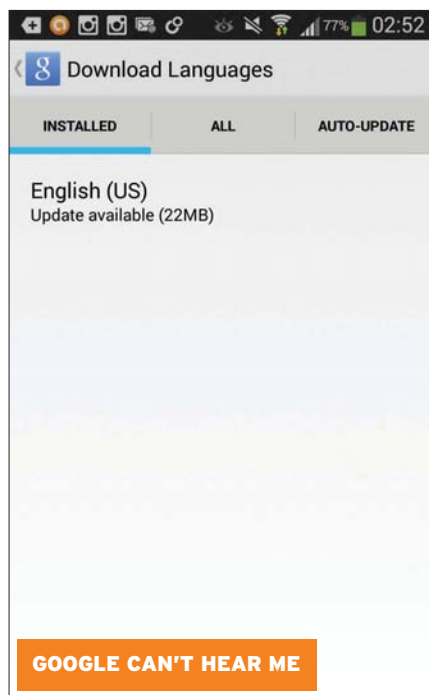
Q When using Google Search on my Android phone, I say the phrase "OK Google", but the device doesn't respond. If I tap the microphone icon, I can speak my commands as normal and they are recognised, but the handset doesn't seem to be listening the rest of the time. Can you help?

If you look at the microphone icon in your Google search bar, you'll probably see that it appears as an outline. Only when this shape is solid, is the system listening for your command.

There are a few things that can prevent the 'OK Google' feature from working properly. First of all, the feature is currently supported only in the US English language. If you've changed the setting to another language or another version of English, the feature won't work until Google updates it in the future. Verify that your voice search language is set to English (US).

A second common problem is other apps running in the background, which may interfere with Voice Search. Those that make sounds are the most obvious candidates, as they could potentially cause the search system to trigger - for example, if you were playing back a podcast about Google where the words 'Google Now' are likely to be uttered. Take a look at your running apps and close as many as possible, then try your search again.

A third possible problem is an out-of-date language pack. Even if your Voice Search



language is set to English (US), you may need to update this language pack in order to get the feature to work. In your Voice Search language settings, select the option marked 'Offline speech recognition'. Now look at the installed tab and you should see English (US) listed. If it also says, 'Update available', select this option to update the language pack. This should restore the 'OK Google' function to working order. Sometimes it can take a little while for the English (US) language pack to show up as installed. If this happens, try selecting the 'ALL' tab and selecting English (US), then click cancel and have another look at the installed tab. It should now show up. ☒

For more PC help go to:
pcadvisor.co.uk/helproom



SEARCH THE
PC ADVISOR FREE
ONLINE HELPROOM

The *PC Advisor* online Helproom contains an indispensable database of answers to common questions regarding all aspects of PC problems. This ranges from general Windows issues to problems with specific apps, and covers all types of PC hardware and software, including system components and peripherals.

Alternatively, you can ask for help from the experts on our online forums. Sign up to be a registered user - which is free - and then browse to one of the discussion forums. In the Helproom your first stop should be the searchable database of frequently asked and previously answered queries. With more than 1.5 million forum posts, you'll almost certainly find your answer in this archive of queries - just enter a few keywords.

If our online database can't solve your problem, try posting a question in the Helproom forum, where more than 200 queries are answered every day. The forum is manned by our team of Helproom Angels, who are ready and willing to lend a hand with anything from system crashes to virus alerts.

helproom@pcadvisor.co.uk
pcadvisor.co.uk/helproom

CONTACT US



Email your Helproom questions to helproom@pcadvisor.co.uk. Please use 'Helproom' as the subject header and give your full name, the operating system you're using and other product details. We will let you know by email if your query has been selected for inclusion in these pages. If your query is urgent, you may find it useful to visit our forum at pcadvisor.co.uk/helproom.

Helproom aims to give you the best assistance possible. But, given the

limitations of this type of advice, we can't guarantee what we say will work and we can't accept responsibility for any damage arising as a result.

Always back up your system before you make any changes, including software installations.

Please note that we are unable to respond to letters or telephone requests, but we will endeavour to answer queries submitted by email or via our Helproom forum.

Change your PC's power settings in Windows 8

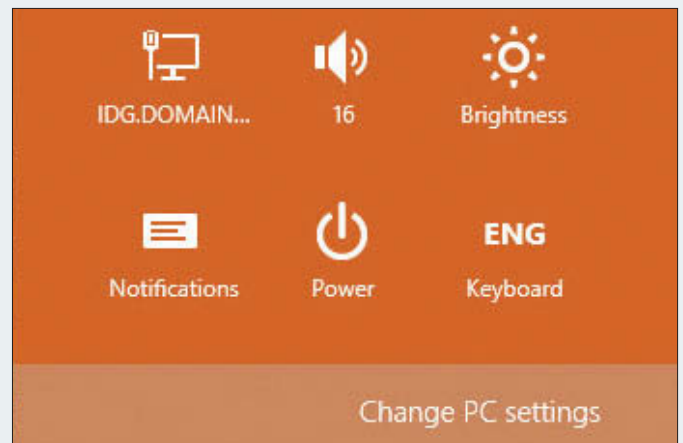
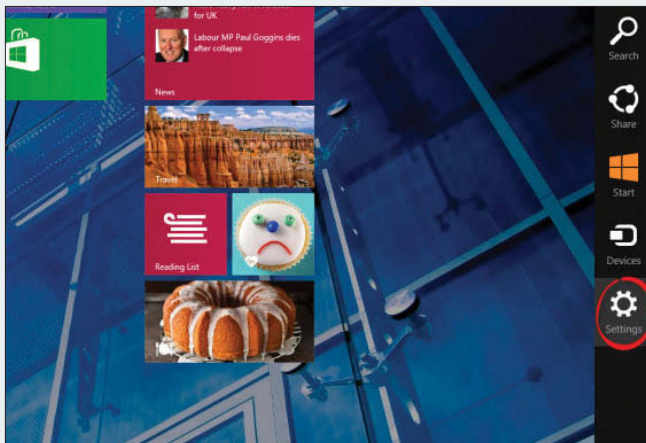


Are you fed up with your PC entering sleep mode a little too quickly for your liking? Jim Martin explains how to change the power settings in Windows 8

By default, Windows 8 is set to save power, which means that your PC screen turns off rather quickly. If you want to change this, then you'll need to access your computer's power settings.

If, however, you're reading this, we'd hazard a guess that you can't find them. Don't worry, you're not alone. In Windows 8 (and 8.1) there are effectively two Control Panels. One can be found on the traditional desktop (right-click in the bottom-left corner to get the 'power' menu with a link to Control Panel) and the other in the Charms bar, under Settings.

Here's the easiest way to increase the idle time and stop your PC or laptop sleeping until you want it to.

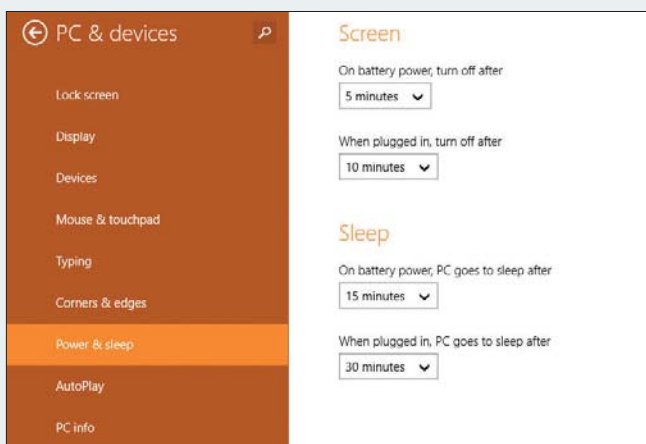


START

Bring up the Charms bar by pressing the Windows key and C together, or by swiping in from the right on a touchscreen. Alternatively, move your mouse to the top or bottom 'hot' corner on the righthand side and the Charms bar will appear.

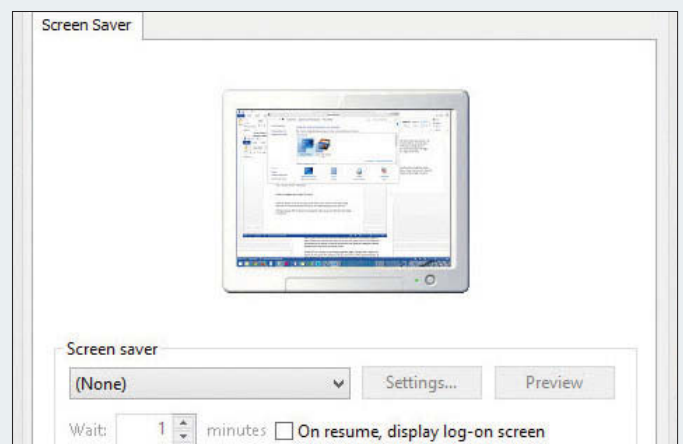
2

Click or tap on Settings and then choose Change PC Settings at the bottom.



3

Go to Power & sleep in the lefthand menu and you'll see options for turning the screen off and when the PC should go to sleep. If you want to completely stop the screen turning off, choose Never from the relevant drop-down.



4

Windows 8 has no screensaver set by default. If you must have one, you can find it by right-clicking on the traditional Desktop and choosing Personalize. Click the Screen Saver link and select a screensaver and the 'Wait' time before it kicks in. ☒

Keep your online data secure from prying eyes



Concerned that your online data in Dropbox or Google Drive might be open to attack? Mike Bedford reveals how to encrypt your cloud-based documents

With ever more of your valuable data being uploaded to the cloud, it pays to give some thought to whether your personal information is safe once it leaves the comparative security of your PC's hard disk. After all, while we might hope and believe that the major file hosting and sharing sites take good care of our online information, cases of successful hacking attacks are worryingly frequent.

In addition, it was recently revealed that Dropbox automatically opens the files you upload to it. The company explained that this was so you can preview your files when you view them in a web browser, but this remains a concern for some users.

If you're anxious at a possible lapse in security, an obvious solution is to encrypt your data before you upload it to the cloud. Then, even if your account is hacked, your files will be unintelligible to the hacker. Here we provide some practical guidance on how to go about this, looking both at conventional encryption software and at those packages that have been designed specifically with cloud storage in mind.

Reality check

First of all, we need to stress that dealing with encrypted files will always be more hassle than if they were unencrypted. In addition, if you want to share your online data with others, they'll also need software to be able to read your documents. Not only that, but if you encrypt your files and then forget the password, in many cases they'll be lost forever, so this isn't something to take lightly. Right at the start, therefore, it pays to give some thought to what you really need to make secure.

It's easy to get paranoid about this but, let's face it, how much of your data would be of any interest to anyone else? Remember, those who hack for the challenge would choose a high-profile site rather than your Dropbox folder, and those who do it for profit would want to be sure the effort is worth the not insignificant cost.

Okay, so peace of mind is a valuable commodity, but it certainly pays to be selective about which of your online files you choose to encrypt. Also, because you'd lose access to your own online encrypted files if you forget your password, it would be wise to take precautions against that eventuality.

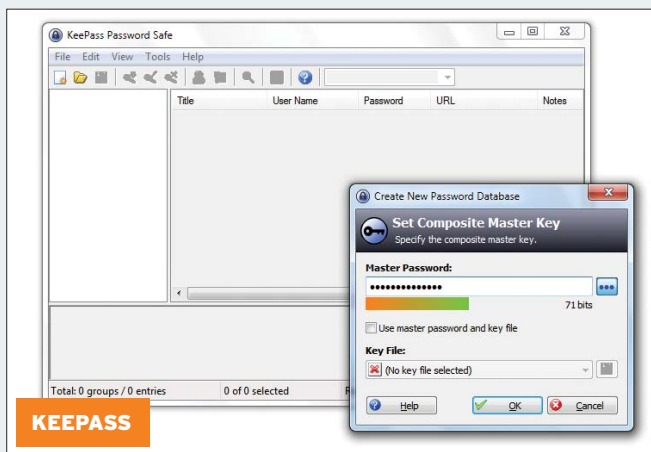
A good solution is to use a password management utility such as KeePass (tinyurl.com/cog9ous). Also, as the ultimate

protection against loss, it would be a good idea to keep an unencrypted copy of your files locally on your PC.

Standard encryption software

Encryption software has been around long before the cloud-based data storage became popular. It's perfectly feasible to encrypt a file on your PC's hard disk using conventional encryption software before uploading it to the cloud so this could be a solution if you already use this type of software. Full disk encryption software wouldn't be suitable. As the name suggests, it encrypts the complete disk so that your data is secure should you PC be stolen. However, it decrypts it on-the-fly when you come to use a file, so anything you uploaded to the cloud would be unencrypted.

A second popular type of software, typified by TrueCrypt (tinyurl.com/5v646ff) and Cryptainer (tinyurl.com/c9sk3xl), simplify encryption by providing an encrypted folder on your disk, so any document you copy here will be encrypted automatically. Again, if you access a file, it'll be encrypted on-the-fly, so long as you've started the software and entered the password, but the whole encrypted folder is, in reality, a single Windows file. You can, therefore, copy that file into the cloud, though, this isn't ideal



KEEPPASS

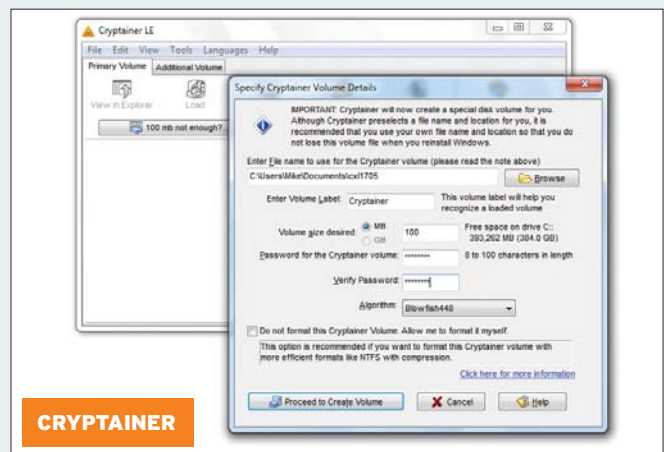
since you'll end up uploading a large file each time you change something. Some of these packages also let you encrypt individual files so you can email them, and this would also allow you to encrypt files before uploading them to the cloud.

However, there's another problem - most of these packages use private key encryption. Here you use a key - a password, for example - to encrypt a file and you have to provide the same key to decrypt it. This is fine so long as you're the only one who is going to be accessing the file, but things get tricky if you want to share data. The difficulty is that you have to find a means of providing the key to whoever you want to share your files with. Telling them face-to-face would be one option, but sending it via email wouldn't be 100 percent secure. Dedicated cloud encryption software solves both the drawbacks with conventional encryption software.

Cloud encryption software

Dedicated cloud encryption packages have two important attributes that makes them more suitable for this application than standard encryption software. First of all, files are encrypted individually rather than being bundled together into a large file with the long upload times this would cause. Secondly, they employ public key encryption. Each person using the software has two keys, one they keep secret and one they publish for anyone to use. A unique feature of the encryption algorithm is that if a file is encrypted using someone's public key, it can only be decrypted using their private key. This allows an encrypted file to be transferred without the difficulty of exchanging any private information.

One well-respected cloud encryption solution that works in this way is called Boxcryptor - it's available for Windows, Mac OS X, iOS

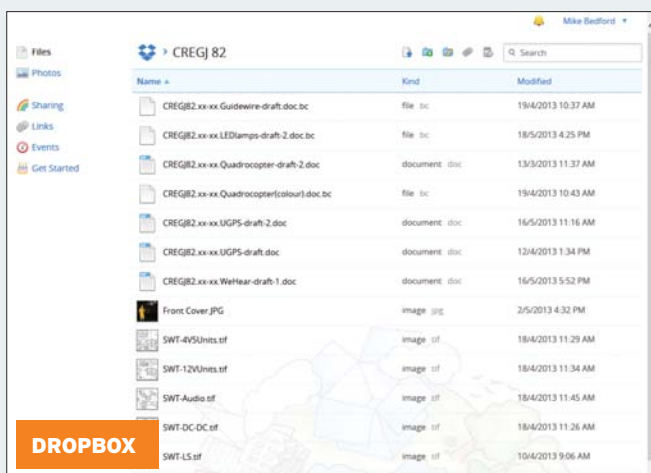


CRYPTAINER

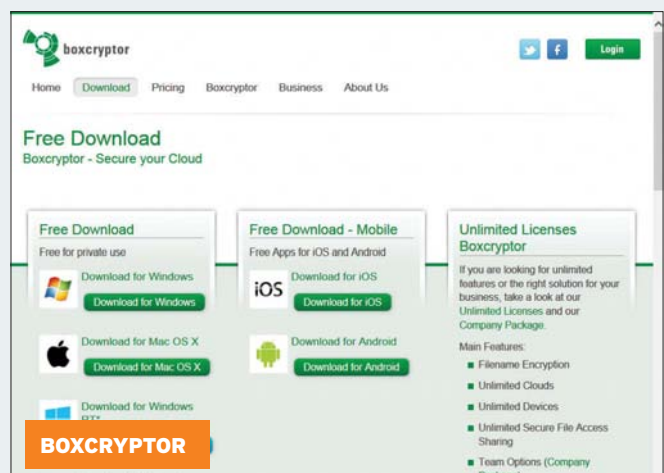
and Android. It works with any cloud storage service that operates by creating a folder on your local disk that parallels your online storage. This includes Dropbox, Google Drive, Microsoft SkyDrive, and more. The Basic service is free, allowing you to work with one cloud provider, or for €36 per year (£30) you can upgrade to the Unlimited Person service. In addition to allowing you to work with multiple cloud services at once, this offers the option of encrypting filenames where the Basic service only encrypts their contents.

First, download and install Boxcryptor (boxcryptor.com), but not the 'Classic' version. On using it for the first time, you must sign up for your chosen service (we suggest you try Basic first) and provide a password. Bear in mind our earlier advice on making sure that you don't lose access to your files by forgetting your password. If you only use one cloud service, Boxcryptor will configure itself to work with it. If it detects more than one it recognises, you must tell it which to use. You can do this, and add or remove folders (subject to the Basic version only supporting one cloud service at once), by right-clicking on the Boxcryptor icon in the notification area, selecting Settings, and then the Locations tab. Note that you can include local folders, too.

You'll find that Boxcryptor creates a new pseudo disk drive (probably X:) and you can go straight to it by double-clicking on the Boxcryptor icon. Your cloud service(s) will appear as one or more folders within that drive. Initially, all the files and folders are unencrypted. To encrypt one, right-click on it, select 'Boxcryptor' and then 'encrypt' from the menu. The filename will turn green to show that it's encrypted. Right-clicking on a green filename allows you to decrypt it or to share it. To share a file in Boxcryptor, you first must have shared it as usual via your cloud service provider, and the person you share it with must also be a Boxcryptor user. ☒



DROPBOX



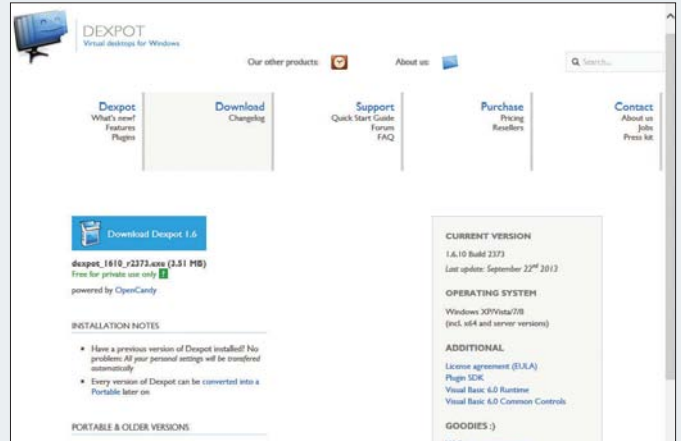
BOXCRYPTOR

Use virtual desktops



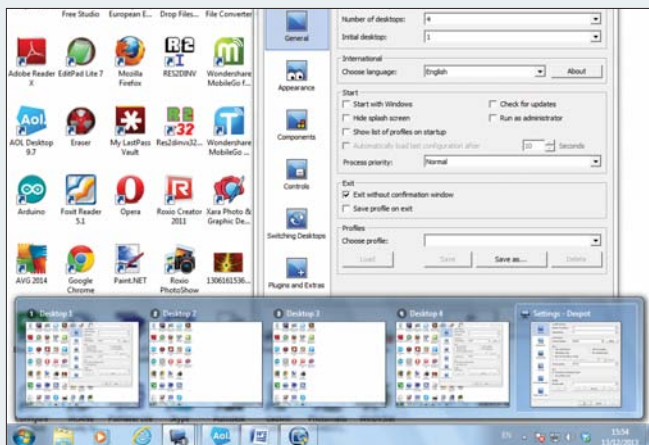
By using several virtual desktops, Mike Bedford shows you how to reduce the clutter and, in so doing, navigate through those icons more easily

Putting icons for documents or applications on your desktop makes it much easier to find what you're looking for – or does it? With just a few icons it's a boon, but after a while finding what you're looking for becomes more tricky. It's not only icons, either. Having lots of programs open at once is another recipe for a cluttered desktop. It doesn't have to be that way, though. For years, Linux and Mac OS X users have enjoyed a feature called virtual desktops. Instead of just the one desktop that's provided by Windows, it's possible to create several and switch between them for different tasks. Although this feature isn't built in to Windows, it's easy to add as we're about to see.

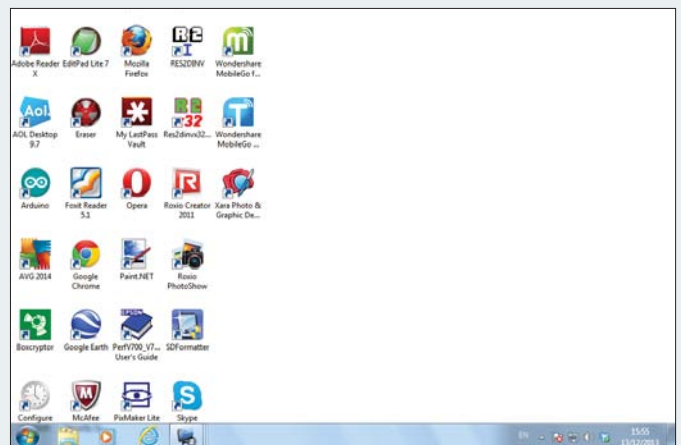


START

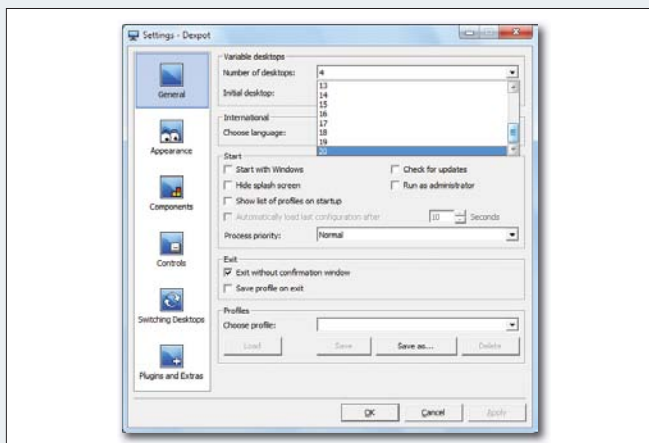
We'll be using Dexpot, so head over to dexpot.de, download the latest version, which is free for private use, and install it on your computer. We suggest that you accept all the defaults during the installation process.



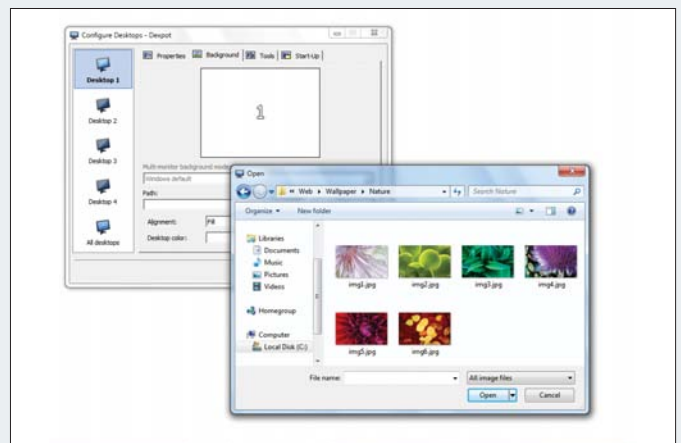
4 Right-click on the Dexpot icon in the notification area and choose Settings. Under 'Plugins and Extras', select SevenDex and click OK. A Dexpot icon will appear in the taskbar. Hover over it and you'll see images of four desktops.



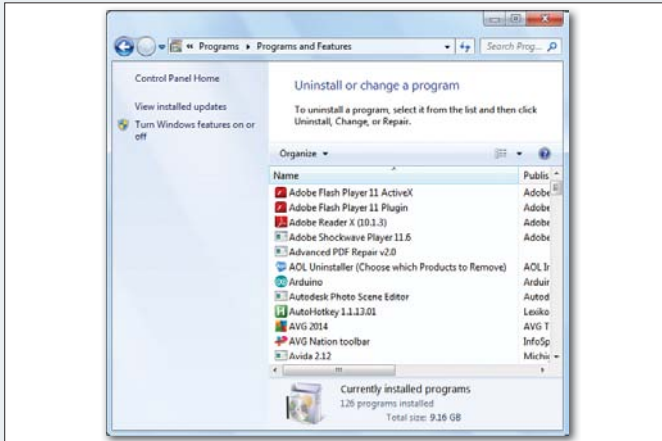
5 To move to a different desktop, click on one of those four desktop images. The new desktop will be displayed and the number in the Dexpot icon will change to reflect which you've chosen. Any applications that were running will no longer be visible.



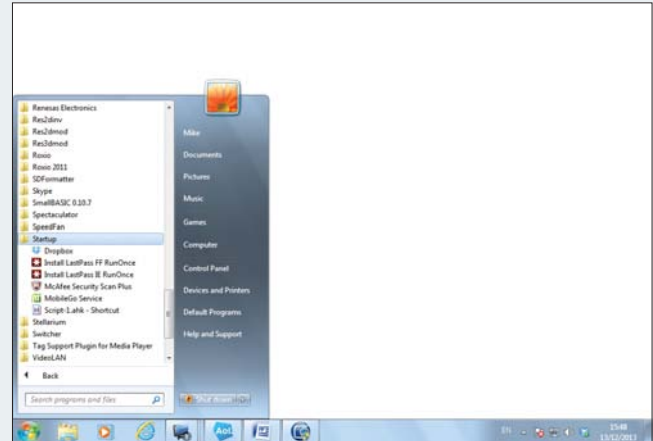
8 You can choose more than four desktops. In Desktop Setting, select General and make your choice of between two and 20 desktops from the 'Number of desktops' pull-down menu. The menu immediately below lets you choose which to display at startup.



9 It's helpful to have a different background for each desktop, so right-click on the Dexpot icon in the notification area and choose 'Configure Desktops'. On the Background tab, select each desktop in turn and pick an image by clicking on Browse.



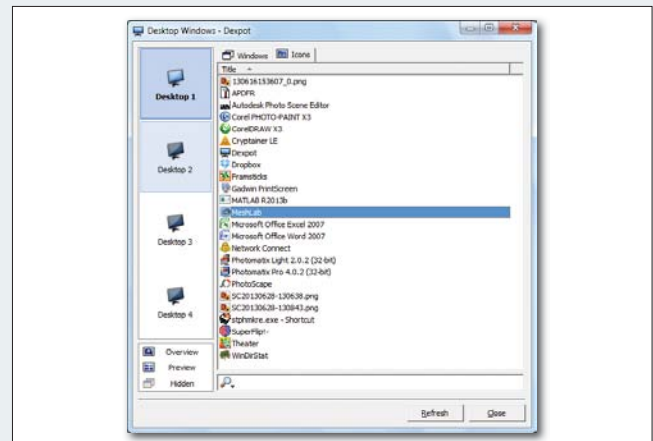
2 Dexpot says that it'll ask before installing third-party software, however, it sneaked one in that we hadn't noticed. If you do end up with some adware uninstall it using Control Panel, declining any other installations you might be offered in the process.



3 Dexpot will run automatically after installation, but it won't run each time you start Windows. If you want that to happen, you'll have to put a shortcut into the Startup Folder – see tinyurl.com/k8e8ww2 for instructions.



6 Start an application that wasn't previously running in the new desktop that you've selected. Switch back to your first desktop and you'll see that there's no sign of it nor its taskbar icon. Try running several programs in each desktop.



7 In Dexpot Settings, select 'Switching Desktops' and check 'Customise desktop icons'. Right-click on the Dexpot icon in the notification area and select 'Desktop Windows'. Select the 'Icon' tab where you can list the icons on each desktop.



10 Shortcuts can speed things up. Try pressing Alt and a number key to switch between desktops. Windows-W displays a larger preview of your desktops than we saw in Step 4, while Windows-F3 shows all the applications that are running in the various desktops.



11 For a fancy interface, select DexCube as we chose SevenDex in Step 4. Now try Ctrl-Alt-left and -right to switch desktops. Some PCs use these hotkeys to rotate the screen (Ctrl-Alt up takes you back), so you may have to redefine them in Dexpot Settings. ☒

Set up a router to expand your Wi-Fi network



If the Wi-Fi signal from your router isn't strong enough, it's possible to add a second to cure the problem. Bob Shelmerdine explains how

Depending on the construction and size of your home, you might find that there are Wi-Fi 'black spots' where the wireless signal doesn't reach or gives a poor performance. Thick stone walls and long distances are the biggest culprits, but sometimes you might have an outside building, shed or office where you'd love to work or play but get online at the same time. You may also find that wandering around your garden with your smartphone or tablet is fine until you're out of range of your wireless network. Using a second wireless router as a 'slave' to your main router is one way of extending your wireless network.

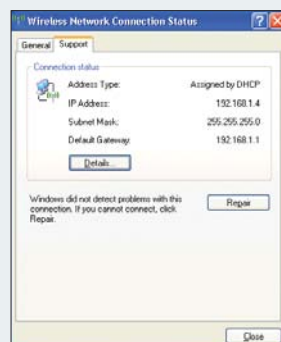
There are some routers and setups where this isn't possible. BT's Home Hub routers, for example, are extremely difficult to use for this purpose and a few ISPs lock down their equipment so that it can't be used in this way. However, routers purchased independently can almost always be used, as can most routers supplied in the past by ISPs. An old router can be connected



to a new router: they don't have to be the same model or even from the same manufacturer to work. Here's how to use an old or spare router to do just that.

START

First, you need to find out some details about the router you're currently using, including which channel it's broadcasting on and what security type it's using. On any Windows PC connected to your network, go to the Control Panel and double-click on Network or Network and Internet. In Windows XP, right-click the network connection that's being used to connect to your router (either Wi-Fi or ethernet) and choose Status, then Support, you'll see a window showing how your network is set up.



For Vista, Windows 7 and 8, go to the Network and Sharing Centre, choose 'Change adapter settings', right-click the appropriate connection and choose Status, then Details.

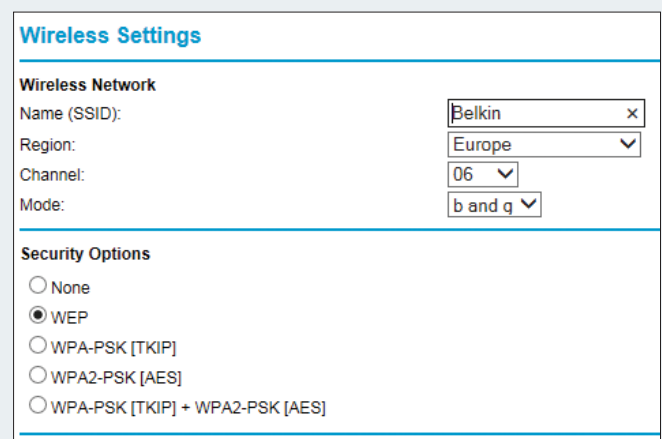
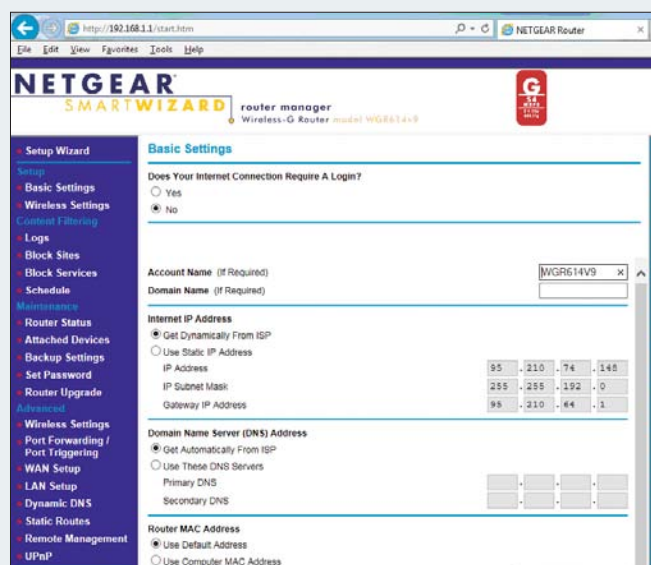
This window will show your gateway and the computer's IP address. Note down your gateway as this is the address of your primary router usually in the format; 192.168.1.1 or similar. Next, open a web browser and, in the address bar, type the gateway IP address you've noted and hit Enter. You should see a setup screen for your primary router. It may ask for a username and password. If you know these details, enter them. If not, the information may be on a label underneath the router, or be found by searching the internet for the default usernames and passwords for your router model.

Once you've accessed the router's configuration screen, you'll see something similar to the bottom-left screen.

2

As you'll see, there are lots of settings you can access and change, but we don't want to reconfigure the primary router, just check its settings. Have a look at the wireless settings and find the detail, which includes the router name, the channel and the security type.

This router's SSID is Belkin, is working on channel 6 and uses WEP for security (ideally you should set this to WPA or WPA2 if available, as it is here). The SSID is the name you find

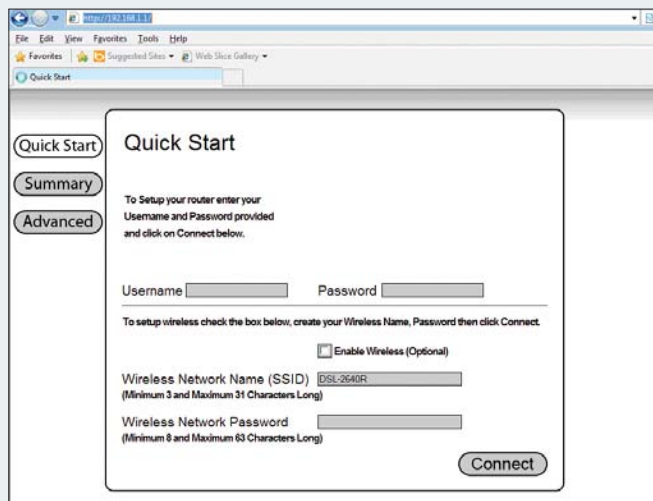


when searching for wireless networks from your laptop, tablet or smartphone. Make a note of the security type because you'll try and set the slave router to the same setting. When you've finished there's usually a 'log out' option. Since you've only looked at the settings and made no changes, there's nothing to save.

3 Having unearthed that old router that you kept when you changed ISPs a few years ago, the first thing you need to do is reset this router to its factory settings. Find a small hole at the back of the device, usually marked 'reset'.

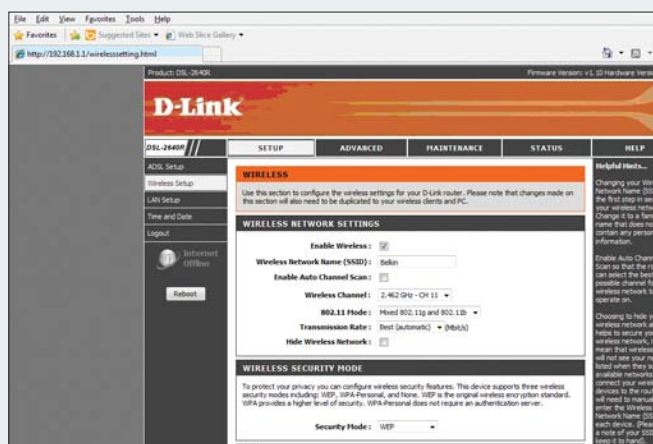
With the router powered on, insert a paper clip or similar, and hold in for a few seconds. When you release the paper clip you should see all the lights on the router go out and come back on again. You've now reset the router to its factory settings.

4 Connect this second router, with a network cable, to a PC that isn't on your network. Turn off your main router for a few minutes while you set up this slave router.



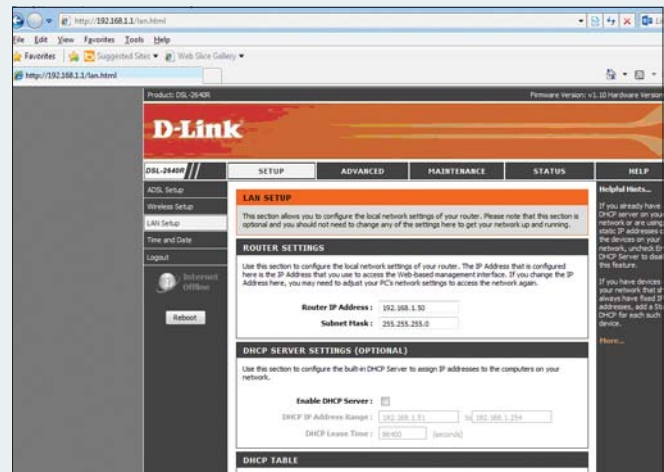
If you only have one PC, you'll have to disconnect it from your working network temporarily. Once attached, go through Step 1 again with this router until you get to the stage where you have accessed the configuration page. Here, we're using a D-Link router.

5 Ignore any setup wizards and go to the Wi-Fi settings page. Enable wireless, change the wireless network name to be the same as the primary router and choose a channel well away from channel 6, which is what the primary router is using. Match the security type exactly and type in the same password you use for Wi-Fi on your primary router.



6 Finally, you need to make the slave router work alongside the primary router by giving it a fixed IP address, which the primary router will recognise and work with.

Go to the LAN setup page (or similar) and give the router an IP address in the same range as the IP addresses given out by my main router, but outside of the range that is automatically assigned by DHCP. Dynamic Host Communications Protocol is the process by which a device issues IP addresses to equipment on the network. You need to stop the slave router giving out IP addresses to devices, leaving that task in the hands of the primary router.



Disable DHCP by unticking it on the relevant configuration page. To assign a fixed IP address, let's assume the main router has an address of 192.168.1.1 and that it's set up to issue addresses - by DHCP - between 192.168.1.2 and 192.168.1.49. Give the slave router an IP address of 192.168.1.50. Note down this address as you might need it to access this router later.

On each configuration page, confirm your choices by clicking 'save settings' at the bottom of each page as you go. Remember, too, that once you've change the router's IP address you'll have to wait for it to reboot, and then access it by typing the new IP address into your browser's address bar.

7 Now we are ready to connect it all together. The ideal way to connect two routers together is with a long network cable. However, this is usually impractical so the best alternative it to use powerline networking adaptors.

These work by using the mains power cables in your walls and floors to act as network cables as well as passing electricity through them. They work only on ring mains that are all connected back to a single consumer unit (fuse box). If you have two separate buildings or an extension that has its own electricity supply and meter, then powerline adaptors aren't going to work.



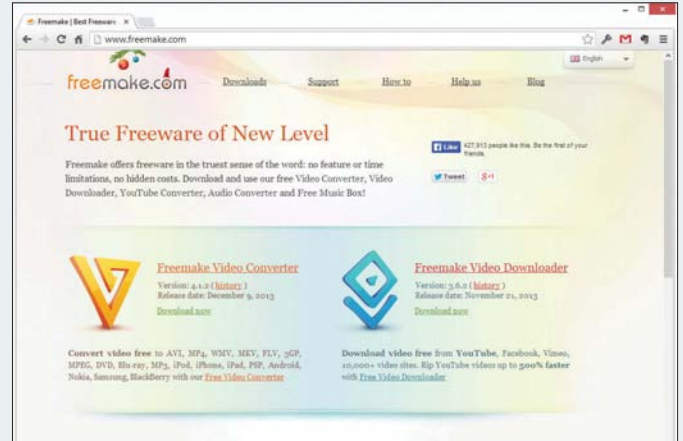
8 With both routers now turned on, it's time to test your network. Take a wireless device, (smartphone, tablet or laptop), and check to see the signal strength when close to each of the routers. You'll find that you've extended the reach of your wireless network and now have a second wireless access point. ☑

Rip DVDs for free



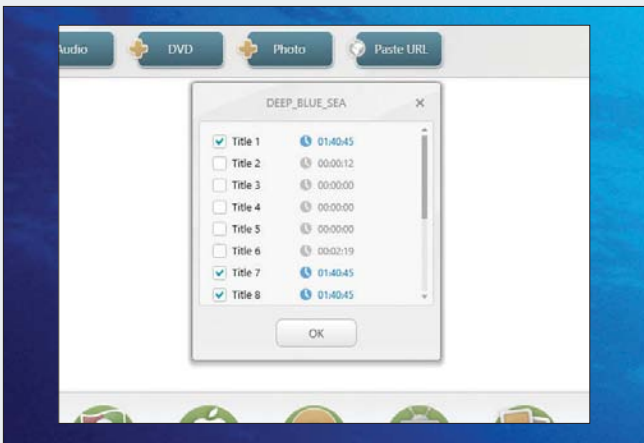
Ripping your DVDs into digital files is a great way to clear some space in your living room – and it's free. David Bayon explains how to get started

These days we have Sky Movies, Netflix and even (whisper it) torrents, so there's a good chance you haven't taken many DVDs off the shelf for a good while now. So it makes more sense to rip the contents onto a hard disk and stick them in a box in the attic. Thankfully, there's plenty of free software available to do just that, and as long as you stick to ripping discs that you legally purchased, you're not doing anything wrong. Advanced users can rip Blu-rays into a same-quality MKV file using MakeMKV, then convert that using Handbrake. But we're going to stick to DVDs and use the simpler Freemake, which does all the work with a few easy clicks.



START

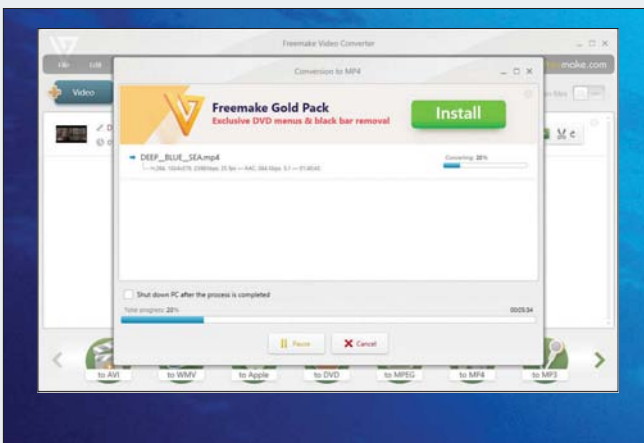
Go to freemake.com and download the Free Video Converter, which will get past the copy protection on the vast majority of DVDs. For Blu-rays, try the MakeMKV beta at makemkv.com.



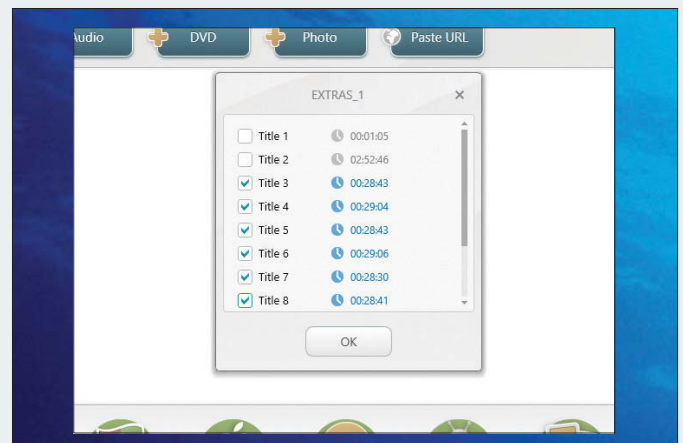
4 The software will read the disc and give you a list of titles. These will include the movie itself and any included extras, so pay close attention to the lengths of each title to work out which one is the film – it will usually be first in the list.



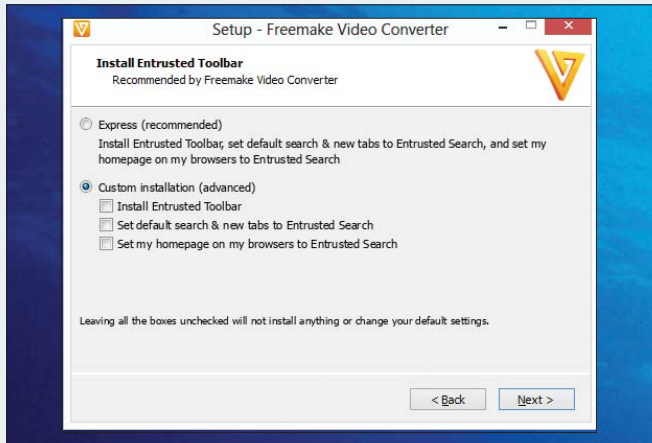
5 The next screen gives more information on each title. If you couldn't decide which one was the movie, use the resolution, bitrate and audio details to make an informed guess. Click the audio details to choose the audio feed you want to rip.



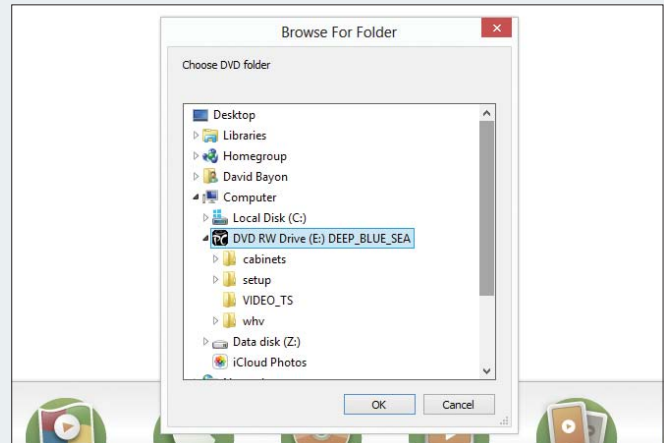
8 Once you've confirmed your choices, this can take a while – anywhere from a few minutes to well over an hour; when it's done, click Show in Folder to access your new rip.



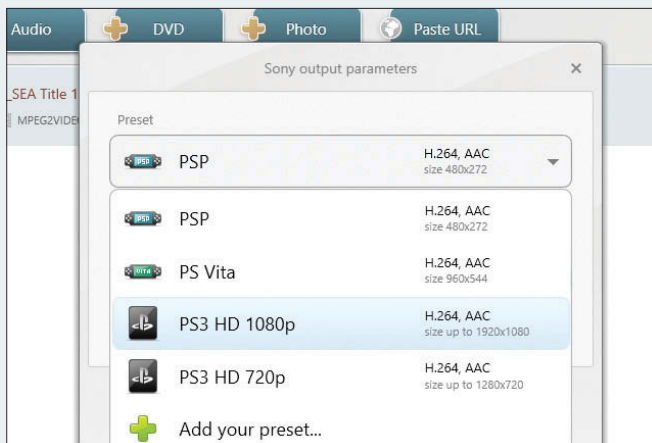
9 The process also works with TV box sets. This time, the import step reveals six roughly half-hour episodes, plus one long track that appears to contain all six. DVDs will vary, and it's up to you what you rip. We'll tick the individual episodes



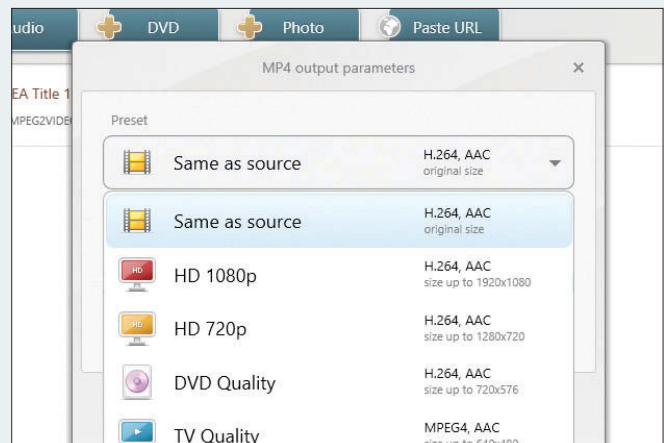
2 Be careful with the installation options. By default it will try to install Outfox TV and Entrusted Toolbar, and change your default homepage and search provider. Choose Custom installation and untick the boxes in both cases.



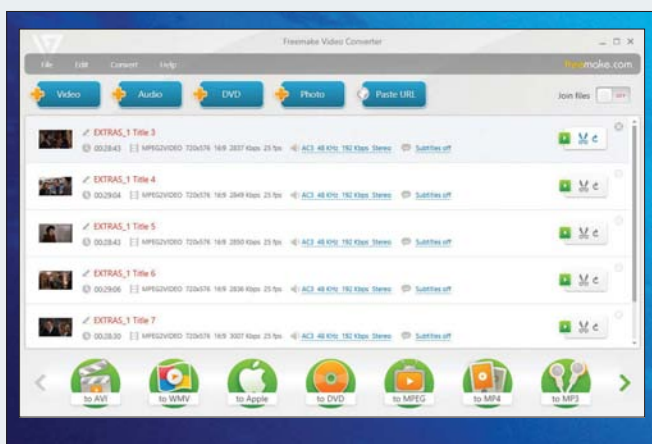
3 The main screen of Free Video Converter has a range of options, from opening video and audio files to entering the URL of an online clip. Insert your disc, click the +DVD button and navigate to your DVD drive in Computer. Then click OK.



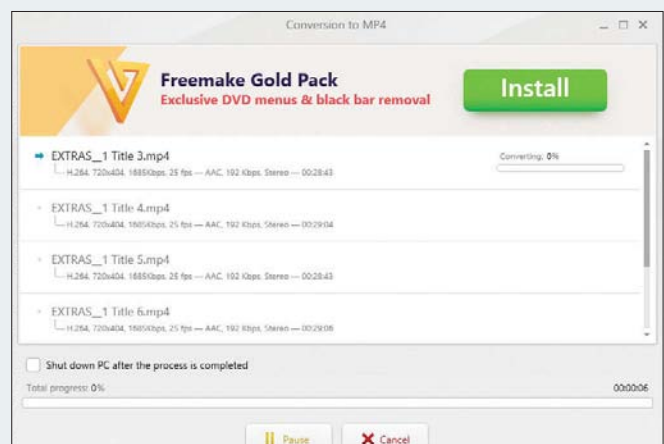
6 At the bottom is a scrollable row of output formats. For playback on a console or mobile device, click your manufacturer and choose your device; for PC playback we'd choose MP4 for maximum compatibility.



7 Before you encode the file, use the drop-down lists to pick the quality you'd like. The software can upconvert to 1080p or 720p, stick with the standard DVD quality, or even shrink the file for mobile viewing. You can also rename the output file here.



10 The next step will give you a thumbnail of each title to check you've got the right ones. If you need more detail, click the edit button to the right of each entry and press play - you'll hear your drive whirl up and the episodes will play.



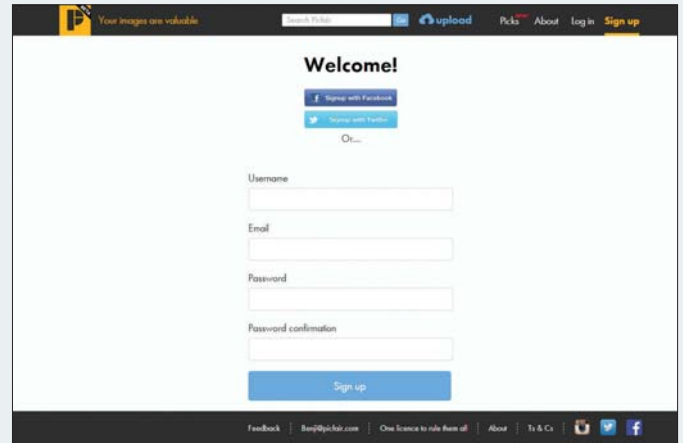
11 This time you'll have to wait for all of your selected episodes to successfully complete, which can take even longer than a movie. When they're done, each selected title will be an individual digital file ready to be enjoyed without the disc. ☑

Sell photos on Picfair



Fancy yourself as a photographer? With Picfair, you can license your best images to earn a bit of spending money. David Bayon explains how

Selling photos is something only the professionals do, right? Wrong. These days you don't need years of experience and expensive equipment to make a bit of cash, you just need an eye for a unique photo and an internet connection. Sites such as Picfair (picfair.com) aim to make the process of licensing your images simple, and open to anyone. You upload your shots to the site, set a licensing price for each one, and wait. If someone wants to use one of your photos – and that could be an individual who wants to put it on their wall or a global corporation looking for a shot for a billboard – they pay that one-off price, plus Picfair's fee, and the image is theirs to use.

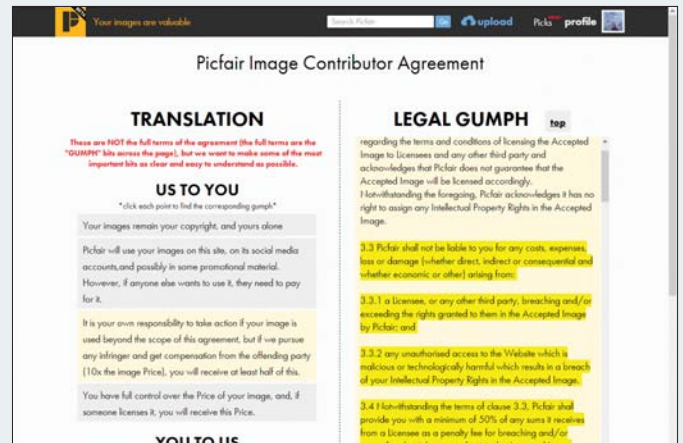


START

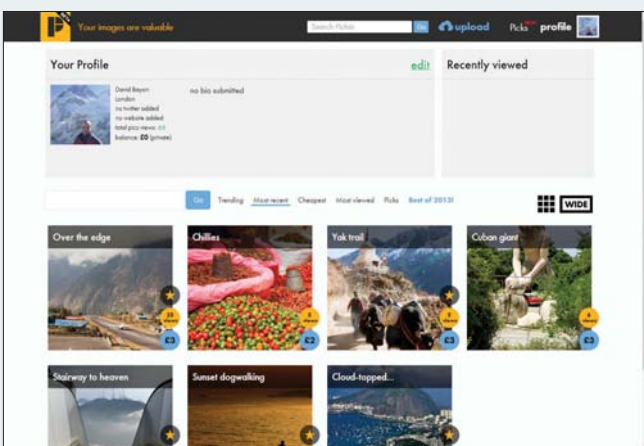
Go to picfair.com, click Sign Up in the top corner, and create an account. You can use your Twitter or Facebook login for simplicity, or use your email address as an identifier if you like to keep things safe and separate.



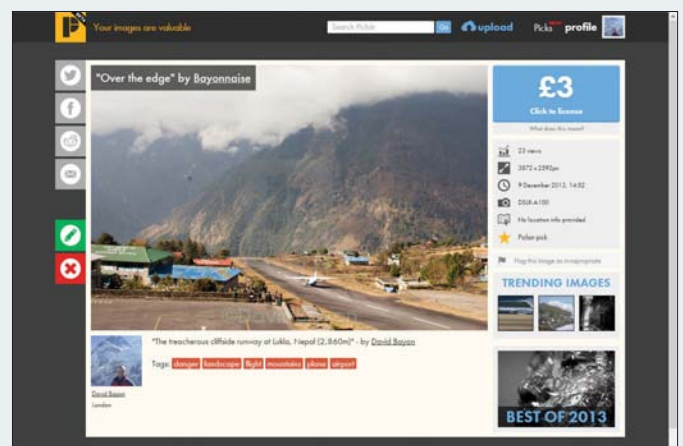
4 Before you upload any photos, make sure you've given your favourites a touch up. That's beyond the scope of this walkthrough, but you can find plenty of tutorials covering everything you need to know about editing photos on our website.



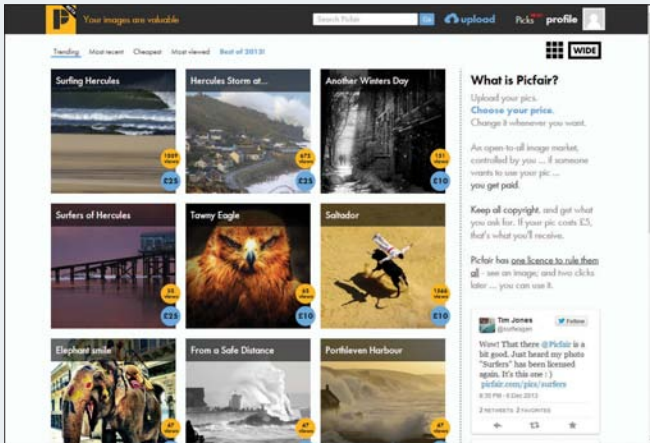
5 Once you've chosen a photo, click Upload. It's important you read the rules in the link on the righthand side. Any image you use must be your property, you must try to get the permission of any subjects, and it should not invade anyone's privacy.



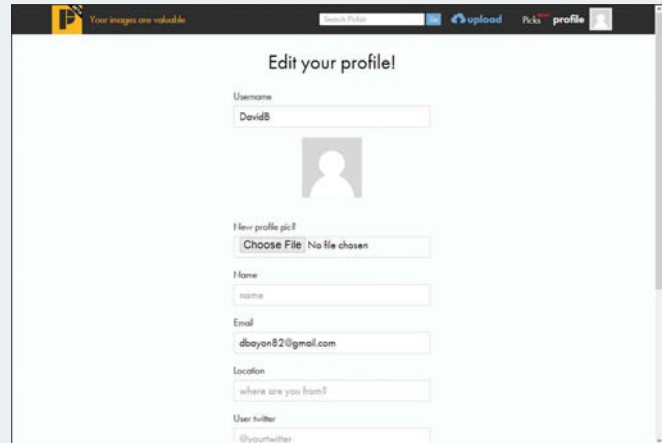
8 Repeat that step a few more times with your best photos until you have a small Picfair portfolio. On your profile page, you can sort your images by price, clicks, whether your image is trending or just search by name or tag.



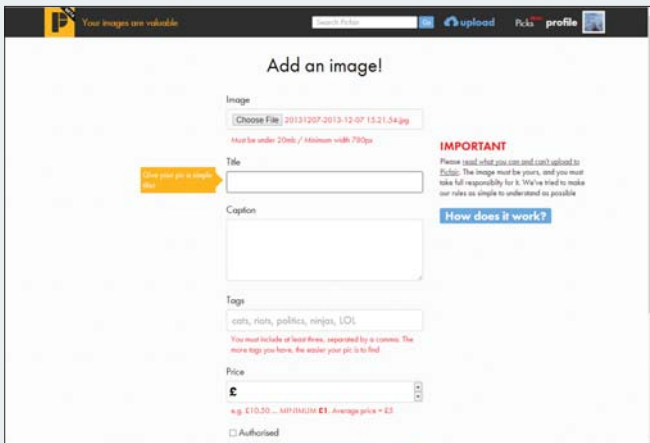
9 If you click on any of your images, you'll get a nice photo view, complete with a watermark of your username. On the right, you'll see your camera's EXIF data from when you took the photo, which can be of interest to buyers.



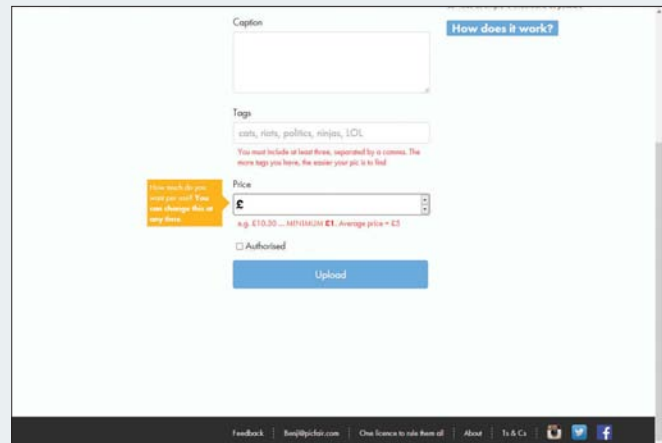
2 Once you've received your verification email and clicked on the link, you'll find yourself at the main Picfair page, with a selection of popular images. Look around before you do anything else; you'll see the quality of the best-selling images is pretty high.



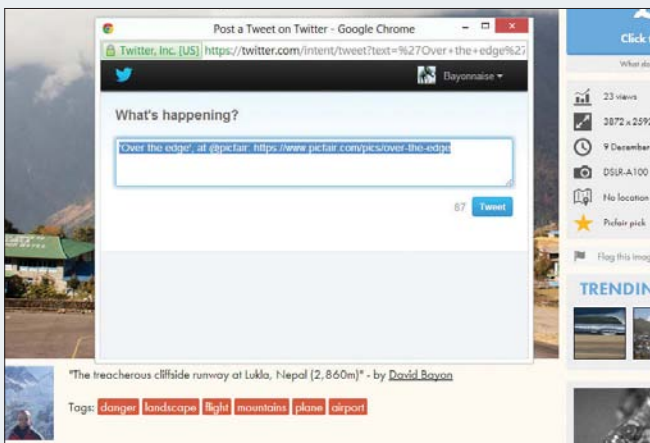
3 The first priority is your user profile. Click Profile in the top corner, then Edit. According to Picfair, users are more likely to license photos if you have a profile picture, so upload one, then add your name and location and some brief bio information.



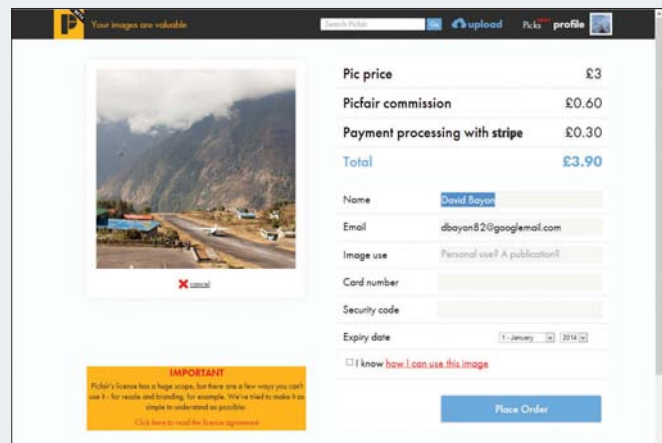
6 Choose a photo and give it a title. This is very important, as a catchy name can bring in the clicks. Don't just type 'Dog' if your photo is of a dog, be a bit more creative. For inspiration, you only need to browse the most popular images.



7 Add a few keywords and a short caption, and then we reach the price. The temptation is to get greedy, but unless you're a professional you have to be realistic. Your photo will have to be stunning to attract buyers at more than few pounds, so start low.



10 The most important elements are the share buttons on the left. Picfair is competitive, so you need to get your photos seen. Click the buttons to open automatically composed social media messages; spruce them up and start getting the word out.



11 If your photos are interesting and your prices are right, hopefully you'll get the occasional email to say someone has paid for the license. If not, you can experiment: lower your prices, try different titles and captions, and keep on sharing. ☒

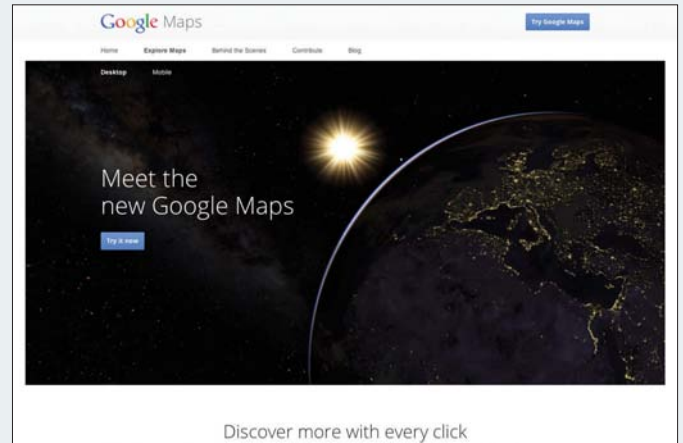
Sync a Google Map



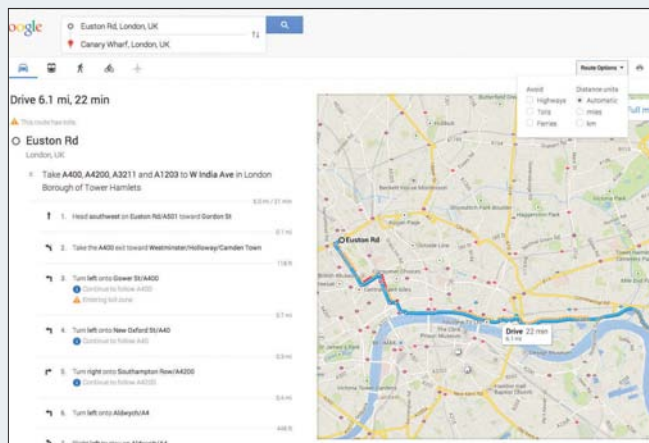
Getting directions before you go on a trip is always a good idea. Martyn Casserly explains how to sync a PC's Google Maps route with a smartphone or tablet

Many people now use a smartphone to navigate instead of a dedicated satnav, and this offers more benefits than having one less device to worry about. Now, with Google Maps' syncing feature, you can work out your route in comfort before you leave using your laptop or PC's bigger screen. Then the directions can be quickly and easily sent to your mobile device.

Here, we'll take you through the simple steps that it takes to get everything up and running. As these are Google services, you'll need to be using its Chrome browser for the features to work, and in this example we'll be syncing to an Android phone, but it also works with an iPhone or iPad.

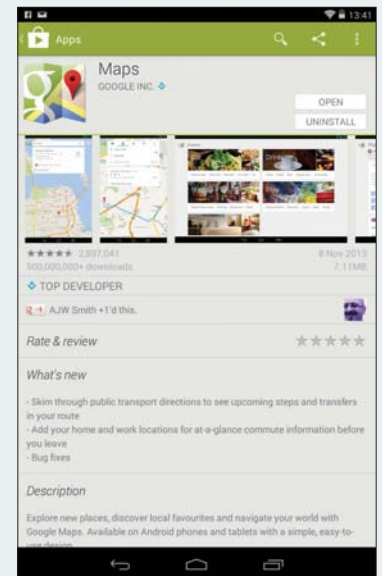


START On your PC go to google.co.uk/maps and you'll see there's a new version of the desktop maps service offered in the left column. Click on 'Get it Now', then 'Click here to start exploring'.

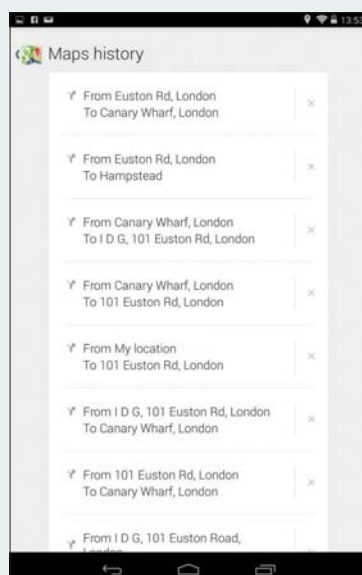


4 Now you'll have a breakdown of the route. If you want to print this off, you can do so by selecting the print icon above the map. There are also options here to avoid tolls, ferries or highways, allowing you to fine-tune the journey.

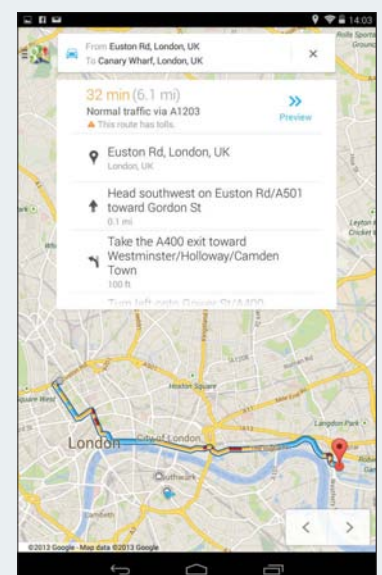
5 Take your Android phone and launch the Google Play store. Now search for Google Maps. It will most likely already be installed, but this will prompt any updates that may have been released. Once that's done, tap 'Open'. It's a similar process on an iPhone.

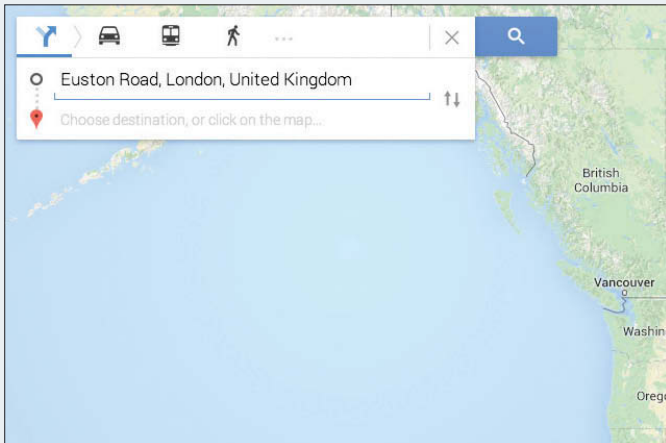


8 Now tap on the 'Maps history' option and you'll be taken to a list of your recent searches on Google Maps. Select the one you want and the app will load up the route that you'd planned on your PC.

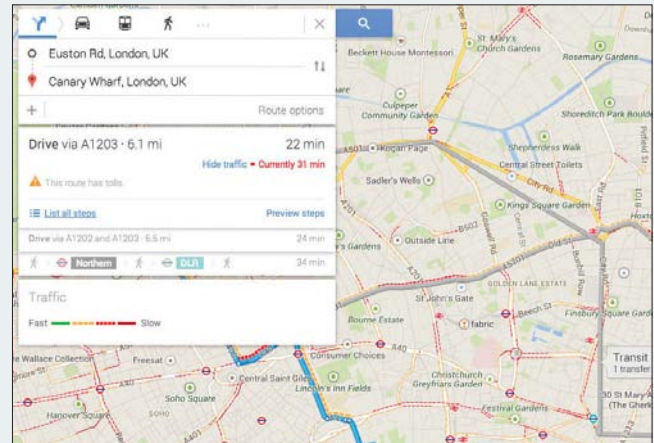


9 The route is listed at the top of the page. Tap on the box below it with the estimated journey time - this will load up the step-by-step guide. If you're not at the start point, you'll only be able to preview the route.



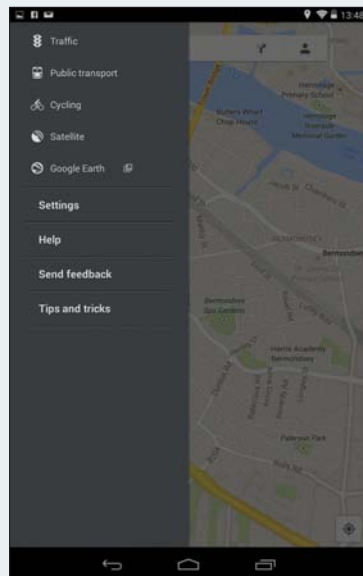


2 Make sure you are logged into your Google account, as this will be important later on. In the left corner of the map screen you'll see a search box. Click the 'Directions' option below this and you can enter the start and end points of your route.

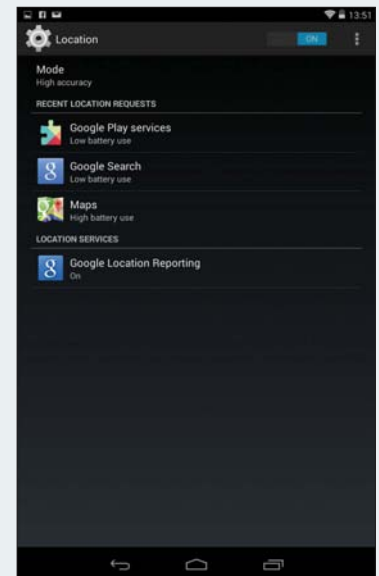


3 When the route is calculated make sure that you select the correct mode of transport from the icons at the top. Next, review the directions. To do this, click on the 'list all steps' option.

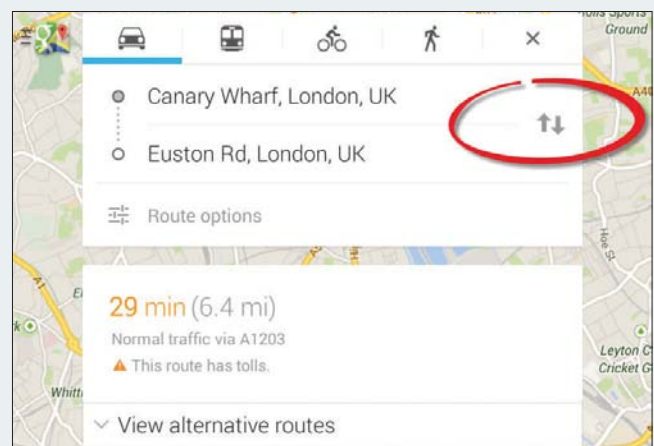
6 You'll need to find the history of your route searches and ensure that location services are turned on. To open the menu bar, look for the stack of three small lines on the lefthand side. Tap on them and choose 'Settings'.



7 Select 'Google location settings' from the menu, then ensure that they are switched on. The slider/button at the top of the screen shows whether they are or not. Next, tap the back button to return to the menu. (On an iPhone, Location Services will need to be turned on in the main Settings app, and specifically enabled for Google Maps.)



10 When you're ready to leave on your trip, tap the 'Start' option to be taken turn-by-turn to your intended destination. Make sure your GPS is switched on in your phone's settings to improve accuracy.



11 When you're returning home, you can reverse the route with one tap. Just load up the journey as before, but when you reach the map page, tap the two arrows on the right side of the origin/destination box. Then you're good to go. ☑



Ashampoo Burning Studio 2014

FULL PROGRAM AVAILABLE ONLY ON THE DISC+

ONLINE
REGISTRATION
REQUIRED

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files 225\Ashampoo Burning Studio 2014 and open the file

Online registration required: follow the links during installation before 16 April 2014

System requirements

Single-core 1GHz/dual-core 1.8GHz processor; Windows XP/Vista/7/8; 2GB RAM; 230MB drive space (plus storage for temporary files); DirectX 9-compatible graphics card with Pixelshader v2.0 hardware support and at least 128MB VRAM; 1280x1024 screen resolution; sound card

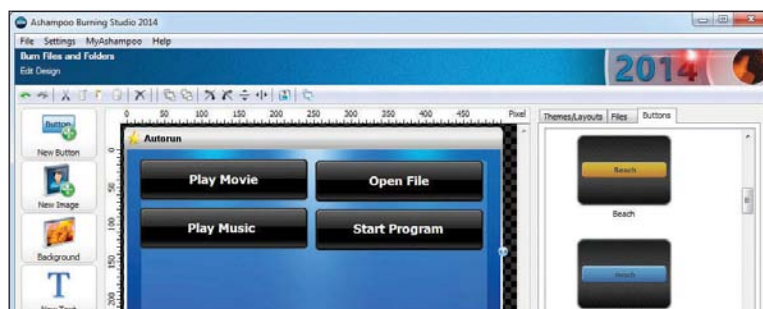
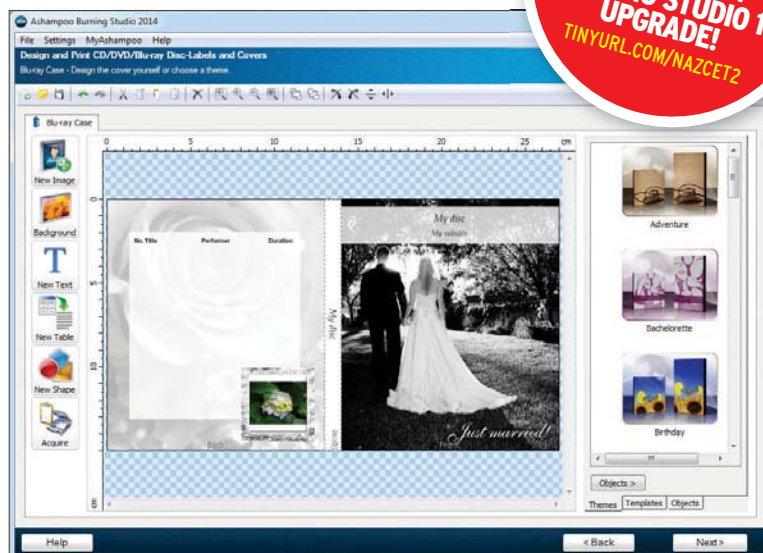
With Ashampoo Burning Studio 2014 you are well equipped for all burning tasks, whether they involve movies, music or documents. Create backups or data discs, rip music and create audio CDs, or simply archive your movies to Blu-ray discs. The highly improved usability and sleek design make Ashampoo Burning Studio 2014 the ideal choice for all burning-related tasks.

Features

- Create data discs with optional autostart feature
- Burn data to CDs, DVDs and Blu-ray discs
- Update existing discs (multi-session)
- Backup files across several CDs, DVDs or Blu-ray discs
- Create audio CDs and MP3/WMA discs
- Rip audio CDs to multiple formats
- Create HD and full-HD video discs
- Duplicate CDs, DVDs and Blu-ray discs
- Create and burn disc images
- Erase rewritable discs
- Create modified copies
- Design and print covers and booklets



**PCA
OFFER**
SAVE £21 ON
BURNING STUDIO 14
UPGRADE!
TINYURL.COM/NAZCET2



Visit our website for more software special offers: pcadvisor.co.uk/special-offers

Abelssoft Converter4Video 2014

FULL PROGRAM

ONLINE
REGISTRATION
REQUIRED

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files 225\Abelssoft Converter4Video 2014 and open the file

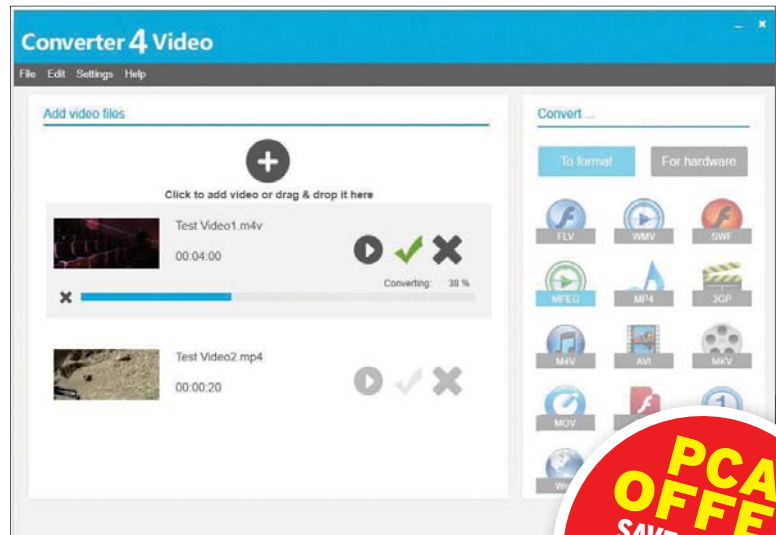
Online registration required: follow the links during installation before 16 April 2014

System requirements
Windows XP/Vista/7/8

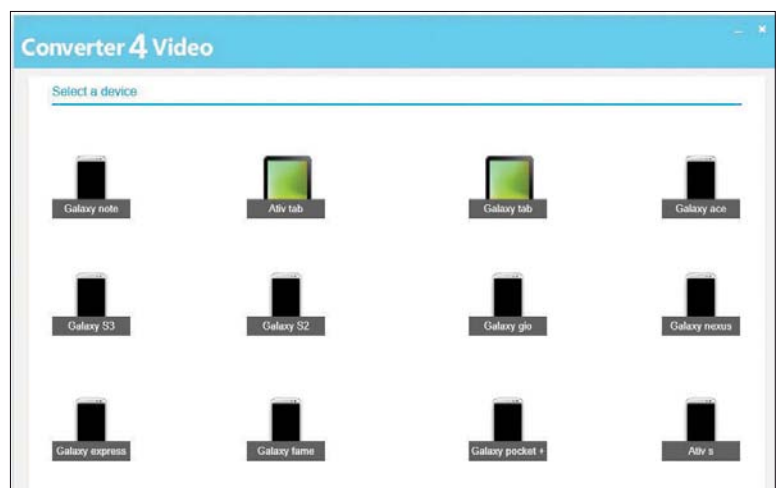
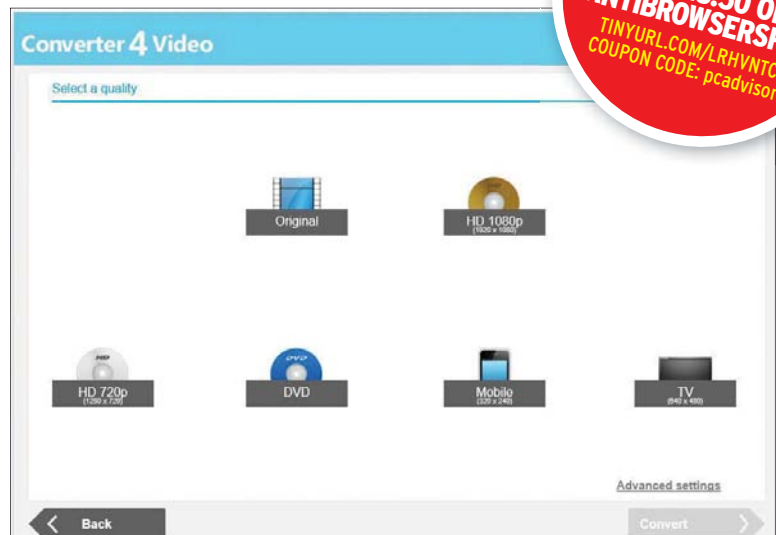
Converter4Video works with all popular video formats to let you make playable your footage on any device, plus you can publish movies directly to YouTube.

Features

- **Fast video conversion:** Converter4Video deploys the most recent conversion- and compression technologies to prevent damage to your footage
- **Easy handling:** Intuitive handling means converting videos with Converter4Video is uncomplicated, even without previous experience
- **Wide range of supported formats:** Converter4Video supports nearly all popular video formats. Select a format and Converter4Video will do the rest
- **Supported devices and hardware profiles:** Don't know which format your device needs? No problem. Converter4Video offers a list of popular devices and well-known producers from which you can select your model
- **Processing videos for the web:** Not all video formats work online, but Converter4Video will ensure your video can be embedded into a website
- **Extract an audio trace from a video:** Converter4Video enables you to extract an audio trace from any video file and to save it as an MP3 file
- **Direct video upload to YouTube:** With Converter4Video you can process your video file with ease and upload it to YouTube within the program



**PCA
OFFER**
SAVE £8.50 ON
ANTIBROWSERSPY!
TINYURL.COM/LRHVNTC
COUPON CODE: pcadvisor



1-abc.net Drive Space Organizer 5

FULL PROGRAM AVAILABLE ONLY ON THE DISC+

ONLINE
REGISTRATION
REQUIRED

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files 225\1-abc.net Drive Space Organizer 5 and open the file

Online registration required:

head to tinyurl.com/ybcjv87 before 16 April 2014

System requirements

Windows XP/Vista/7/8

Masses of programs and data are saved on to all manner of storage mediums, from hard drives, CDs, DVDs and USB sticks to memory cards and networked drives, yet it isn't long before we start running out of storage space.

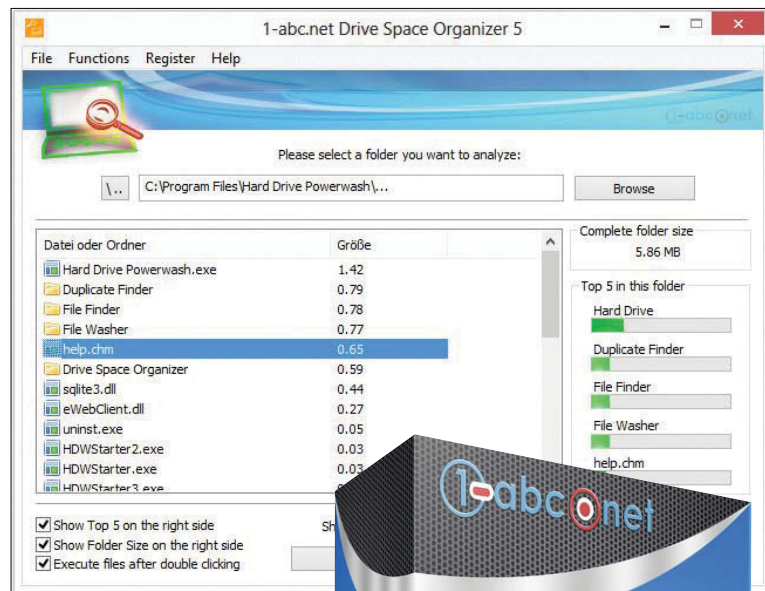
Where does all your drive space go? And do you really have to delete files you'd rather keep just to save a bit of space?

1-abc.net Drive Space Organizer offers an alternative solution. It seeks out your largest files - and the folders containing the most data - on your system, then helps you to reclaim that precious storage space.

Working with 1-abc.net Drive Space Organizer is easy, with all features accessible from the main screen. The program can quickly analyse any kind of disk and automatically sorts its contents.

You can specify whether file sizes are shown in kB, MB or GB, and double-click to switch between folders and sub-folders. Files can be removed from your system within Drive Space Organizer.

The five largest items in an analysed folder are shown with a percentage bar, allowing you to see what really wastes valuable space on your computer. ☒



DISC INSTRUCTIONS

Place disc in drive. Open the file 'Click here to begin.pdf' for extra information.

The disc on the cover of *PC Advisor* is supplied as is, subject to the following terms. The disc is provided to readers of *PC Advisor* for their personal use and may not be resold or copied for distribution.

The publisher shall have no liability without limitation for any losses or damage arising from using these programs or taking advice from the cover-disc helpline, including any loss of profit,

damage to equipment or data, interruption of business, or any other damage, whether direct or accidental. It's recommended that you back up your applications and important data before installing this software.

Where telephone numbers or URLs are given for registration, these may be valid for a limited period and only to UK users. We cannot be held responsible for discontinued offers. This doesn't affect your statutory rights. All product descriptions given here are provided by original software developers.

If your disc is missing or faulty, please visit pcadvisor.co.uk/cd/replacement to request a replacement. The code for April's disc is PCA0414DISC. Please allow 14 days for delivery. Other FAQs are answered at pcadvisor.co.uk/cd/faq.

All you need to know about Apple's latest iPads



The Complete Guide to the iPad Air

A comprehensive guide designed to steer readers through all the amazing new features of Apple's iPad Air

- Easy-to-use iPad setup guide
- Step-by-step iOS 7 tutorials & app guides
- Every new feature explained

**ON SALE
NOW**
£9.99
EACH

The Complete Guide to the iPad mini

Get to know everything about the latest iPad mini, and how to use it to its fullest ability.

- Tips, tricks, tutorials, features & iOS 7 secrets
- Set up your iPad - read books, watch movies & TV
- **PLUS** 50 best apps & accessories for your iPad mini



Available from WHSmith Stores

Also available in digital format through Zinio & the Macworld Newsstand App



SUBSCRIBE TO PC ADVISOR

FREE SOFTWARE WORTH £64! **FULL PROGRAM: AVIRA ANTIVIRUS SUITE 2014** **DISC +** **EXPERT ADVICE YOU CAN TRUST**
PC ADVISOR
WORLD'S SMALLEST PCs
 Space-saving Mini PCs with the power of a full-size desktop
51 LAPTOP & PC REVIEWS INSIDE

FREE SOFTWARE WORTH £101! **FULL PROGRAM: PRIVACY SUITE 14** **DISC +** **EXPERT ADVICE YOU CAN TRUST**
PC ADVISOR
ARE YOU USING THE ANTI-VIRUS SUITE?
26 best internet security suites revealed

FREE SOFTWARE WORTH £66! **FULL PROGRAM: PANDA INTERNET SECURITY 2014** **DISC +** **EXPERT ADVICE YOU CAN TRUST**
PC ADVISOR
BEST LAPTOP DEALS
33 Windows laptops reviewed inside
+ WHY YOU SHOULD BUY A £199 GOOGLE CHROMEBOOK

Avira Antivirus Suite 2014
 Malware protection for your PCs, laptops and Android devices
 Full program (includes three months of updates)
1-abcnet File Washer 6 **INCINEMA WebSite XS Compact 9** **ashampoo MP3 Cover Finder**
FULL PROGRAM WORTH £12 **FULL PROGRAM WORTH £25** **FULL PROGRAM WORTH £20**
PC ADVISOR 10 FULL WINDOWS PROGRAMS

steganos Privacy Suite 14
 Secure files and passwords on PC, laptop and in the cloud
FULL PROGRAM WORTH £50
ashampoo Movie Studio 2013
 Import and edit movies, images and music
FULL PROGRAM WORTH £35
PC ADVISOR 10 FULL WINDOWS PROGRAMS

Panda Antivirus Pro
 Protect PCs and laptops from viruses, spyware, rootkits and trojans
FULL PROGRAM 6 MONTHS OF UPDATES
PC ADVISOR 10 FULL WINDOWS PROGRAMS

PANDA Internet Security 2014
 Real-time protection against ID theft, spyware, viruses & more
PLUS: parental controls & free secure backup
FULL LICENCE PLUS: 6 months of updates
ashampoo Snap 6 **1-abcnet Synchronizer 6** **Abitsoft StartupStar**
FULL PROGRAM WORTH £15 **FULL PROGRAM WORTH £30** **FULL PROGRAM WORTH £16**
PC ADVISOR 10 FULL WINDOWS PROGRAMS

FIX IT FAST
 Save £££s by mending your PC yourself

Improve your PC's audio
 Make everything sound better on any PC or laptop

PLUS: Set up a home network for printing and file sharing

ISSUE 222 JAN 2014 PRICE £5.99
 ISSN 1472-7395
 9 771471 739034
IDG UNITED KINGDOM

ISSUE 224 MAR 2014 PRICE £5.99
 ISSN 1472-7395
 9 771471 739034
IDG UNITED KINGDOM

CALL NOW
0844 844 0232
& quote P225

Pay just £2.99 an issue.

Get a 6-month subscription to **PC Advisor** for £19.99 or pick up 12 issues for just £35.88, saving 50%

Enjoy these benefits:

- ✓ **ONLY £2.99 an issue** (normal price £5.99)
- ✓ **Save over 50%** on the shop price
- ✓ Disc packed with the latest software and downloads
- ✓ **PRIORITY delivery** direct to your door each month

Every issue of PC Advisor is packed with the latest news, reviews and features, plus comprehensive, impartial buying advice and easy-to-understand tutorials to help you to get the most from your laptop, PC and tech gadgets. Each printed issue includes a free cover disc packed with the latest full-version Windows programs.

PC ADVISOR TEST CENTRE

PC Advisor's charts rank and rate the best products every month. If you're looking to buy the latest and greatest kit, look no further than our 100-plus reviews



Ultraportable laptops



Sub-£500 laptops



£1,001+ laptops



Tablets



Smartphones



All-in-one PCs



Business PCs



Family PCs



Blu-ray drives



Wireless routers



Printers



Projectors



Solid-state drives



Graphics cards



Flat-panel displays

Index

Ultraportable laptops.....	127
Sub-£500 laptops.....	128
£501-£1,000 laptops.....	129
£1,001+ laptops.....	130
Tablets.....	131
Smartphones.....	132
Mini PCs.....	134
All-in-one PCs.....	135
Business PCs.....	136
Family PCs.....	138
Security software.....	139
Printers.....	140
Blu-ray drives.....	141
Wireless routers.....	141
NAS drives.....	142
USB drives.....	142
Solid-state drives.....	143
Projectors.....	143
Graphics cards.....	144
Flat-panel displays.....	145

Prices

Laptops

Laptops up to £500
£501 to £1,000
£1,001 and over

Printers

Printers under £150
£151 and over

Graphics cards

Graphics cards under £150
£151 and over

Flat-panels

Flat-panels under £200
£201 and over

Prices listed are those quoted by the distributor or manufacturer and include VAT. They are intended only as a guide and you may see products on sale for less or more than our quoted price.


If you're interested in purchasing one of the products reviewed here then please contact the manufacturer or supplier directly, mentioning both *PC Advisor* and the issue in which you saw the product. If it won't supply the product as reviewed, contact us at letters@pcadvisor.co.uk.

Manufacturers are under no obligation to feature reviewed products on their websites. *PC Advisor's* recommendations are for guidance only. The publisher takes no responsibility for purchasers' decisions.





Star ratings and Gold, Recommended and Best Buy badges are awarded at the time of the original review and given in relation to the market competition at that time.

Read reviews of 14,700-plus products, extended analysis and price comparisons, then buy direct online:

pcadvisor.co.uk/reviews

Ultraportable laptops	    				
	1	2	3	4	5
	Apple MacBook Pro 13in Retina	Apple MacBook Air 13in	Apple MacBook Air 11in	Dell XPS 12	Asus ZenBook Prime Touch
Price	£1,499 inc VAT	£949 inc VAT	£849 inc VAT	£1179 inc VAT	£1,499 inc VAT
Website	Apple.com/uk	Apple.com/uk	Apple.com/uk	Dell.co.uk	Asus.com/uk
Launch date	22.10.13	10.06.13	10.06.13	09.08.13	Not specified
Build rating	★★★★★★	★★★★★	★★★★★	★★★★★	★★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	2.6GHz Intel Core i5	1.3GHz Intel Core i5-4250U	1.3GHz Intel Core i3-5250U	1.8GHz Intel Core i7-4500U	2GHz Intel Core i7-3537U
RAM	8GB DDR3L	4GB DDR3L	4GB LPDDR3	8GB DDR3L	4GB DDR3
Storage	512GB SSD	128GB SSD	128GB SSD	256GB SSD	256GB SSD
Screen size	13.3in glossy (anti-glare)	13.3in glossy (anti-glare)	11.6in glossy (anti-glare)	12.5in glossy touchscreen	13.3in glossy touchscreen
Screen resolution	2560x1600	1440x900	1366x768	1920x1080	1920x1080
Graphics	Intel Iris Graphics	Intel HD Graphics 5000	Intel HD Graphics 5000	Intel HD Graphics 4400	Intel HD 4000
Video memory	N/A	N/A	N/A	N/A	N/A
Wireless	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11b/g/n	802.11b/g/n
Ethernet	Optional	Optional	Optional	None	None
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0	2x USB 3.0	2x USB 3.0	2x USB 3.0
FireWire	x	x	x	x	x
Thunderbolt	✓	✓	✓	x	x
DisplayPort	x	✓	✓	✓	x
HDMI	✓	x	x	x	✓
DVI	x	x	x	x	x
VGA	x	x	x	x	✓
eSATA	x	x	x	x	x
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	N/A	N/A	N/A	N/A
Extras	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, backlit keyboard	None	720p webcam
Operating system	Mac OS X 10.9 Mavericks	Mac OS X 10.9 Mavericks	Mac OS X 10.9 Mavericks	Windows 8 64-bit	Windows 8 64-bit
Bundled software	iLife 11	iLife 11	iLife 11	None	None
Fear (Max detail)	Not tested	Not tested	Not tested	27fps	15fps
Battery	71.8Wh lithium-polymer	54Wh lithium-polymer	38Wh lithium-polymer	Not stated	50Wh lithium-polymer
Battery life	9 hrs 55 mins	12 hrs 57 mins	8 hrs 56 mins	6 hrs 45 mins	5 hrs 5 mins
PC Mark 7 score	Not tested	4602	4080	5205	5112
Dimensions	314x219x18mm	325x227x4-17.5mm	300x192x17mm	317x215x20mm	320x220x11mm
Weight	1.57kg	1.35kg	1.08kg	1.52kg	1.3kg
Warranty	1-year return-to-base	1-year return-to-base	1-year return-to-base	1-year enhanced	1-year return-to-base
FULL REVIEW	TINYURL.COM/M3TNC29	TINYURL.COM/KNXWZ3	TINYURL.COM/K64ZPKB	TINYURL.COM/QBAWKLC	TINYURL.COM/NNF3UOU

HEAD TO TINYURL.COM/N6R5438 FOR OUR LAPTOP BUYING ADVICE

Sub-£500 laptops	    				
	Dell Inspiron 14z	Compaq CQ58-300sa	HP Pavilion 14	Lenovo G505s	Packard Bell EasyNote TE11
Price	£470 inc VAT	£250 inc VAT	£370 inc VAT	£390 inc VAT	£329 inc VAT
Website	Dell.co.uk	Saveonlaptops.co.uk	Saveonlaptops.co.uk	Lenovo.com/uk	Packardbell.co.uk
Launch date	Not specified	06.02.13	10.09.13	30.11.13	Not specified
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Processor	1.9GHz Intel Core i3-3227U	1.4GHz AMD E1-1200	1.8GHz Intel Core i3-3217U	2.8GHz AMD A8-4500M	1.7GHz Intel Celeron B820
RAM	4GB DDR3	2GB DDR3	4GB DDR3	4GB DDR3	6GB DDR3
Storage	500GB HDD + 32GB mSATA	320GB HDD	320GB HDD + 32GB SSD	1TB	500GB HDD
Screen size	14in glossy	15.6in glossy	14in glossy	15.6in glossy	15.6in glossy
Screen resolution	1366x768	1366x768	1366x768	1366x768	1366x768
Graphics	AMD Radeon HD 7570M	AMD Radeon HD 7310	Intel HD Graphics 4000	N/A	Intel HD Graphics
Video memory	N/A	N/A	N/A	N/A	N/A
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	10/100	10/100	10/100	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✗
USB	2x USB 3.0	3x USB 3.0	2x USB 3.0, 1x USB 2.0	1x USB 3.0, 2x USB 2.0	3x USB 3.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✗	✗	✗	✗
DisplayPort	✗	✗	✗	✗	✗
HDMI	✓	✓	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✗	✓	✗	✓	✓
eSATA	✗	✗	✗	✗	✗
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	8x DVD ± RW	8x DVD ± RW	N/A	8x DVD ± RW	8x DVD ± RW
Extras	Webcam	Webcam	Webcam	Webcam	Webcam
Operating system	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64bit	Windows 8 64bit
Bundled software	None	None	None	PowerDVD	None
Stalker (720p)	22fps	9fps	23fps	Not tested	17fps
Battery	44Wh lithium-ion	47Wh lithium-ion	37Wh lithium-ion	41Wh lithium-ion	48Wh lithium-ion
Battery life	5 hrs 10 mins	4 hrs 45 mins	4 hrs	3 hrs	3 hrs 26 mins
PCMark 7 score	3486	1094	2547	2700	1989
Dimensions	347x240x21mm	376x247x33mm	347x238x21mm	380x260x26mm	383x252x32mm
Weight	1.9kg	2.3kg	1.8kg	2.4kg	2.5kg
Warranty	1-year return-to-base	1-year return-to-base	1-year return-to-base	1-year return-to-base	1-year return-to-base
FULL REVIEW	TINYURL.COM/M3TNC29	TINYURL.COM/KNXWZ3	TINYURL.COM/K64ZPKB	TINYURL.COM/QBAWKLC	TINYURL.COM/NNF3UOU

HEAD TO TINYURL.COM/N6R5438 FOR OUR LAPTOP BUYING ADVICE

£501-£1,000 laptops	1	2	3	4	5
	Chillblast Defiant Mini 13	Dell Latitude 3440	Scan 3XS LG155	PC Specialist Optimus V	Asus V550CA
Price	£899 inc VAT	£545 inc VAT	£909 inc VAT	£937 inc VAT	£570 inc VAT
Website	Chillblast.com	Dell.co.uk	3xs.scan.co.uk	Pcspecialist.co.uk	Asus.com/uk
Launch date	Not specified	24.10.13	Not specified	Not specified	12.06.13
Build rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Processor	3.4GHz Intel Core i7-4700MQ	1.6GHz Intel Core i5-4200U	2.4GHz Intel Core i7-4700MQ	2.4GHz Intel Core i7-4700MQ	1.8GHz Intel Core i5-3337U
RAM	8GB DDR3	4GB DDR3	8GB DDR3	8GB DDR3	6GB DDR3
Storage	1TB HDD	500GB HDD	1TB HDD hybrid	1TB hard drive + 120GB SSD	1TB HDD
Screen size	13.3in matt	14in matt	15.6in	17.3in	15.6in glossy touchscreen
Screen resolution	1920x1080	1366x768	1920x1080	1920x1080	1366x768
Graphics	GTX 765M/Intel HD 4600	Intel HD 4400	GTX 765M/Intel HD 4600	GTX 765M/Intel HD 4600	Intel HD 4000
Video memory	2GB	N/A	2GB	2GB	N/A
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	3x USB 3.0, 1x USB 2.0	2x USB 3.0, 1x USB 2.0	2x USB 3.0, 2x USB 2.0	3x USB 3.0, 1x USB 2.0	1x USB 3.0, 2x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✗	✗	✗	✗
DisplayPort	✗	✗	✗	✗	✗
HDMI	✓	✗	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✓	✓	✓	✓	✓
eSATA	✗	✗	✓	✓	✗
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	8x DVD±RW	8x DVD±RW	6x BD-ROM	8x DVD±RW
Extras	Webcam	Webcam	Webcam	Webcam	Webcam
Operating system	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	None	None	None	None	Asus utilities
Stalker (720p/1080p)	150/90fps	24fps	68/62fps	Not tested	22fps
Battery	62Wh lithium-ion	40Wh lithium-ion	77Wh lithium-ion	76.9Wh lithium-ion	44Wh lithium-ion
Battery life	4 hrs	5 hrs 50 mins	4 hrs	3 hrs 29 mins	3 hrs 25 mins
PCMark 7 score	4720	2699	4700	6099	2463
Dimensions	330x227x35mm	346x245x25mm	374x250x43mm	413x278x44mm	380x266x22mm
Weight	2.1kg	2kg	2.7kg	3.2kg	2.6kg
Warranty	1-year return-to-base	1-year business	2-year return-to-base	3-year return-to-base	1-year return-to-base
FULL REVIEW	TINYURL.COM/PBZPA65	TINYURL.COM/KQGO23P	TINYURL.COM/KYSYQ6K	TINYURL.COM/Q5QRFJ2	TINYURL.COM/NQALWLF

HEAD TO TINYURL.COM/N6R5438 FOR OUR LAPTOP BUYING ADVICE

	<div> <div>  <div>1</div> <div>PC ADVISOR GOLD</div> </div> <div>  <div>2</div> </div> <div>  <div>3</div> </div> <div>  <div>4</div> </div> <div>  <div>5</div> </div> </div>				
	Apple 15in MacBook Pro Retina	Toshiba Qosmio X70-A	Chillblast Messiah 17 GTX780M	MSI GS70 Stealth	Schenker XMG P503
Price	£1,699 inc VAT	£1,699 inc VAT	£1,799 inc VAT	£1,600 inc VAT	£1,515 inc VAT
Website	Apple.com/uk	Toshiba.co.uk	Chillblast.com	Uk.msi.com	Mysn.co.uk
Launch date	22.10.13	09.09.13	Not specified	30.10.13	Not specified
Build rating	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★★
Performance rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★★
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	2GHz Intel Core i7-4750HQ	2.4GHz Intel Core i7-4700MQ	2.7GHz Intel Core i7-4800MQ	2.4GHz Intel Core i7-4700HQ	2.4GHz Intel Core i7-4700MQ
RAM	8GB DDR3	16GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage	256GB SSD	1TB/256GB SSD hybrid	1TB + 250GB SSD	750GB + 2x 128GB SSD	750GB + 256GB SSD
Screen size	15.4in glossy (anti-glare)	17.3in gloss	17.3in matt	17.3in matt	15.6in matt
Screen resolution	2880x1800	1920x1080	1920x1080	1920x1080	1920x1080
Graphics	Intel Iris Pro	nVidia GeForce GTX 770M	nVidia GeForce GTX 780M	nVidia GeForce GT 765M	AMD Radeon HD 8970M
Video memory	128MB	3GB	4GB	2GB	4GB
Wireless	802.11a/b/n/ac, MIMO	802.11b/g/n, WiDi	802.11b/g/n, WiDi	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0, 2x USB 2.0	3x USB 3.0, 1x USB 2.0	4x USB 3.0	3x USB 3.0, 1x USB 2.0
FireWire	✓	✗	✗	✗	✓
Thunderbolt	✓	✗	✗	✗	✗
DisplayPort	✓	✗	✓	✓	✓
HDMI	✓	✓	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✗	✓	✗	✓	✗
eSATA	✗	✗	✓	✗	✓
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	N/A	BD-RE	N/A	BD-ROM
Extras	Webcam	2Mp webcam	2.1Mp webcam	HD webcam	2Mp webcam
Operating system	OS X Mavericks	Windows 8 64bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	Apple iLife	None	None	None	None
Stalker (720p/1080p)	62/57fps (Batman)	50/43fps (Batman)	64fps	86fps	Not tested
Battery	958Wh lithium-polymer	47Wh lithium-ion	77Wh lithium-ion	Lithium-ion	77Wh lithium-ion
Battery life	8 hrs 14 mins	3 hrs 5 mins	4 hrs 15 mins	3 hrs 31 mins	2 hrs 40 mins
PCMark7 score	N/A	6164	6316	6060	6205
Dimensions	359x247x18mm	418x273x44mm	412x276x55mm	419x287x22mm	375x268x50mm
Weight	2.02kg	3.4kg	3.9kg	2.6kg	3.4kg
Warranty	1-year return-to-base	1-year European	2-year collect-and-return	2-year warranty	2-year collect-and-return
FULL REVIEW	TINYURL.COM/K3QSD9Y	TINYURL.COM/P5BD3GB	TINYURL.COM/PCJP94Q	TINYURL.COM/L5YXXVA	TINYURL.COM/9WTG6MP

HEAD TO [TINYURL.COM/N6R5438](http://tinyurl.com/n6r5438) FOR OUR LAPTOP BUYING ADVICE

Tablets	1	2	3	4	5
	Google Nexus 7 (2013)	Apple iPad Air	Apple iPad mini (1st gen)	Google Nexus 10 by Samsung	Sony Xperia Tablet Z
Price	£199 inc VAT	£399 inc VAT	£249 inc VAT	£319 inc VAT	£339 inc VAT
Website	Play.google.com	Apple.com/uk	Apple.com/uk	Play.google.com	Sony.co.uk
Launch date	26.07.13	22.10.13	02.11.12	13.11.12	08.05.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform	Android 4.3 Jelly Bean	Apple iOS 7	Apple iOS 7	Android 4.4 KitKat	Android 4.1 Jelly Bean
Screen size/resolution	7in/1280x800	9.7in/2048x1536	7.9in/1024x768	10.1in/2560x1600	10.1in/1920x1200
Storage/media card slot	16GB/none	16GB/none	16GB/none	16GB/none	16GB/microSDXC
Connectivity	802.11b/g/n, Bluetooth 4	802.11a/b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4, NFC	802.11a/b/g/n, Bluetooth 4, NFC
Processor	1.5GHz Snapdragon S4 Pro	Apple A7	1GHz Apple A5	1.7GHz Cortex A-15	1.5GHz SnapDragon S4 Pro
RAM	2GB	1GB	512MB	2GB	2GB
Claimed battery life	9 hrs	10 hrs	10 hrs	9 hrs	10 hrs
Cameras (front/rear)	1.2/5Mp	1.2/5Mp	1.2/5Mp	1.9/5Mp	2.2/8.1Mp
Dimensions	114x200x8.7mm	169x240x7.5mm	135x200x7.2mm	178x264x8.9mm	172x266x6.9mm
Weight	299g	469g	308g	603g	495g
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/QYUDY5C	TINYURL.COM/LSB84EE	TINYURL.COM/CLJWUVS	TINYURL.COM/ARL2KDG	TINYURL.COM/ODTP6B8

Tablets continued...	6	7	8	9	10
	Advent Vega Tegra Note 7	Tesco Hudl	Barnes & Noble Nook HD	Kobo Arc 10HD	Amazon Kindle Fire HD
Price	£129 inc VAT	£119 inc VAT	£110 inc VAT	£299 inc VAT	£119 inc VAT
Website	Currys.co.uk	Tesco.com	Uk.nook.com	Kobo.com	Amazon.co.uk
Launch date	15.11.13	23.09.13	04.12.12	16.09.13	25.10.12
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform	Android 4.3 Jelly Bean	Android 4.2.2 Jelly Bean	Custom Android 4.0.3 ICS	Android 4.2 Jelly Bean	Amazon (based on Android 4.0)
Screen size/resolution	7in/1280x800	7in/1440x900	7in/1440x900	10.1in/2560x1600	7in/1280x800
Storage/media card slot	16GB/microSDHC	16GB/microSDHC	8GB/microSDHC	16GB/none	16GB/none
Connectivity	802.11b/g/n, Bluetooth 4	802.11a/b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 3	802.11b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4
Processor	1.9GHz nVidia Tegra 4	1.5GHz quad-core A9	1.3GHz OMAP 4470	1.8GHz nVidia Tegra 4	1.2GHz TI Omap 4460
RAM	1GB	16GB	1GB	2GB	752MB
Claimed battery life	10 hrs	9 hrs	10.5 hrs	9.5 hrs	8 hrs
Cameras (front/rear)	0.3/5Mp	2/3Mp	None	1.3Mp/none	1.3Mp/none
Dimensions	120x190x10mm	129x193x9.9mm	127x194x11mm	172x253x9.9mm	137x193x10.3mm
Weight	320g	370g	315g	627g	395g
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/PMCO4H4	TINYURL.COM/MXHXVUK	TINYURL.COM/CM8LQKG	TINYURL.COM/KHJ2RXN	TINYURL.COM/CH6CLNZ

HEAD TO TINYURL.COM/KL2EV4G FOR OUR TABLET BUYING ADVICE

Smartphones	1	2	3	4	5
	LG G2	Google Nexus 5	Sony Xperia Z1	Apple iPhone 5s	Motorola Moto G
Price	£329 inc VAT	£299 inc VAT	£430 inc VAT	£549 inc VAT	£129 inc VAT
Website	Lg.com/uk	Play.google.com	Sonymobile.com	Apple.com/uk	Motorola.co.uk
Launch date	24.09.13	31.10.13	02.07.13	20.09.13	13.11.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform	Android 4.2 Jelly Bean	Android 4.4 KitKat	Android 4.2 Jelly Bean	Apple iOS 7	Android 4.3 Jelly Bean
Screen size/resolution	2.26GHz Snapdragon 800	2.3GHz Snapdragon 800	2.26GHz Snapdragon 800	1.3GHz Apple A7	1.2GHz Snapdragon 400
Storage/media card slot	16GB/none	16GB/none	16GB/microSDXC	16GB/none	8GB/none
Connectivity	5.2in/1920x1080	4.95in/1920x1080	5in/1920x1080	4in/640x1136	4.5in/720x1280
Processor	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch
RAM	4G, HSPA+, Bluetooth, Wi-Fi	HSPA+, Bluetooth, Wi-Fi ac	4G, HSPA+, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi	HSDP+, GSM, Bluetooth, Wi-Fi
Claimed battery life	Not specified	17 hrs/300 hrs	14 hrs/880 hrs	10 hrs/250 hrs	Not specified
Cameras (front/rear)	13Mp, 1080p video	8Mp, 1080p video	20.7Mp, 1080p video	8Mp, 1080p video	5Mp, 720p video
Dimensions	A-GPS	A-GPS	A-GPS	A-GPS, Glonass	A-GPS
Weight	71x139x9.4mm, 143g	69x138x8.9mm, 130g	144x74x8.5mm, 169g	59x124x7.6mm, 112g	66x130x11.6mm, 143g
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/PAFK4SZ	TINYURL.COM/PAFK4SZ	TINYURL.COM/NJPM4DE	TINYURL.COM/MZ8JHLF	TINYURL.COM/NBUTSET

Smartphones continued...	6	7	8	9	10
	HTC One	Samsung Galaxy Note 3	Sony Xperia Z	Samsung Galaxy S4	Apple iPhone 5c
Price	£430 inc VAT	£445 inc VAT	£320 inc VAT	£427 inc VAT	£469 inc VAT
Website	Htc.com/uk	Samsung.com/uk	Sonymobile.com	Samsung.com/uk	Apple.com/uk
Launch date	19.02.13	01.09.13	08.01.13	15.03.13	20.09.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform	Android 4.2 Jelly Bean	Android 4.3 Jelly Bean	Android 4.1 Jelly Bean	Android 4.3 Jelly Bean	Apple iOS 7.0
Screen size/resolution	1.7GHz Snapdragon 600	2.3GHz Snapdragon	1.5GHz Snapdragon S4 Pro	1.9GHz Snapdragon 600	1GHz Apple A6
Storage/media card slot	32GB/none	32GB/microSDXC	16GB/microSDHC	16GB/microSDXC	16GB/none
Connectivity	4.7in/1920x1080	5.7in/1920x1080	5in/1920x1080	5in/1920x1080	4in/640x1136
Processor	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch
RAM	4G, HSPA+, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi	4G, Bluetooth, Wi-Fi	4G, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi
Claimed battery life	Not specified	21 hrs/420 hrs	11 hrs/550 hrs	Not specified	10 hrs/250 hrs
Cameras (front/rear)	4Mp, 1080p video	13Mp, 1080p video	13Mp, 1080p video	13Mp, 1080p video	8Mp, 1080p video
Dimensions	GPS, Glonass	A-GPS, Glonass	GPS, Glonass	GPS, Glonass	A-GPS, Glonass
Weight	68x9.3x137mm, 143g	151x79x8.3mm, 168g	71x7.9x139mm, 146g	136.6x69.8x7.9mm, 130g	59x124x9mm, 132g
Warranty	2 years	1 year	2 years	2 years	1 year
FULL REVIEW	TINYURL.COM/CE76X3T	TINYURL.COM/QAKOLZY	TINYURL.COM/CXDR829	TINYURL.COM/CA5P7LF	TINYURL.COM/KN23JD8

HEAD TO TINYURL.COM/OTU6XA9 FOR OUR SMARTPHONE BUYING ADVICE

All you need to know about Apple's best and most affordable smartphones yet

**ON SALE
NOW**



Available from WHSmith Stores

Also available in digital format through Zinio & the Macworld Newsstand App



Mini PCs	    				
	1	2	3	4	5
	Intel NUC D54250WYK	Fujitsu Esprimo Q520	Chillblast Fusion Brix	Zotac Zbox nano ID65 PLUS	Lenovo IdeaCentre Q190
Price	£525 inc VAT	£389 inc VAT	£549 inc VAT	£530 inc VAT	£380 inc VAT
Website	Intel.co.uk	Fujitsu.com/uk	Chillblast.com	Zotac.com	Lenovo.com/uk
Launch date	04.12.13	04.12.13	04.12.13	04.12.13	04.12.13
Build rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	1.36GHz Intel Core i5-4250U (Turbo boost 2.6GHz)	2.9GHz Intel Core i3-4130T	1.9GHz Intel Core i3-3227U	2GHz Intel Core i7-3537U (Turbo boost 3.1GHz)	1.4GHz Intel Core i3-2365M
CPU cooler	Fan cooler	Passive cooler	Custom semi-active cooler	Smart fan	Fan
RAM	8GB DDR3	4GB DDR3	8GB DDR3	4GB DDR3	4GB DDR3
Storage	180GB Intel 530 Series mSATA SSD	320GB HDD	120GB Intel 525 mSATA SSD	500GB HDD	1TB HDD
Power supply	65W internal	65W internal	65W external	19V 3.42a external	19V 1.7A external
Motherboard	Intel Wilson Canyon D54250WYB	Fujitsu motherboard (Intel H81)	Intel HM77	HM77 Express	Lenovo custom
Operating system	Not supplied	Windows 8 Standard or Pro	Windows 8 64-bit	Not supplied	Windows 8
Graphics	Intel HD Graphics 5000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 3000
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Connectivity	802.11b/g/n/ac, gigabit ethernet, Bluetooth	Gigabit ethernet	802.11b/g/n, gigabit ethernet, Bluetooth	802.11b/g/n, gigabit ethernet, Bluetooth	802.11b/g/n, gigabit ethernet
Ports	4x USB 3.0, HDMI, Mini DisplayPort	2x USB 3.0, 4x USB 2.0, DVI, DisplayPort	2x USB 3.0, HDMI, Mini DisplayPort	4x USB 3.0, 2x USB 2.0, HDMI, DP, S/PDIF, eSATA	2x USB 3.0, 4x USB 2.0, HDMI, VGA, S/PDIF
Media card slot	None	None	None	MMC/SDXC/MS/MS Pro/xD	SDXC/MS Pro
Other	Integrated VESA mount, MS Office, PowerDVD	Integrated VESA mount, MS Office, PowerDVD	VESA mounting bracket	Webcam, VESA mounting bracket, PowerDVD	VESA mounting bracket, desktop stand
Dimensions	117x112x35mm	185x188x54mm	29.9x107.9x114.6mm	127x127x45mm	192x155x22mm
Weight	1kg	1.6kg	400g	1kg	1.2kg
PCMark 7 score	4681	2988	4094	2882	1905
Alien vs Predator score (720p/1080p)	7fps/5fps	6fps/Low	7fps/5fps	6fps/Low	N/A
Sniper V2 Elite score (Low/High/Ultra)	21fps/7fps/Low	21fps/7fps/Low	21fps/6fps/Low	18fps/6fps/Low	9fps/5fps/Low
Power consumption (idle/max)	7W/27W	10W/46W	10W/42W	11W/36W	11W/34W
Warranty	Varies	1-year onsite	2-year collect-and-return	2-year return-to-base	1-year return-to-base
FULL REVIEW	TINYURL.COM/KDBLVND	TINYURL.COM/KS56DVT	TINYURL.COM/PWX38WW	TINYURL.COM/PRSOKRD	TINYURL.COM/KT4MNQ8

HEAD TO TINYURL.COM/PYWN4DA FOR OUR DESKTOP PC BUYING ADVICE

All-in-one PCs					
	1  PC ADVISOR BEST BUY	2  PC ADVISOR RECOMMENDED	3  PC ADVISOR RECOMMENDED	4 	5 
	Dell XPS 2720	Apple iMac 27in (Late 2012)	Medion Akoya P2002	Chillblast Fusion AIO Ultima	MSI Wind Top AE2712G
Price	£1,749 inc VAT	£1,699 inc VAT	£449 inc VAT	£1,199 inc VAT	£1199 inc VAT
Website	Dell.co.uk	Apple.com/uk	Medion.com/gb	Chillblast.com	Uk.msi.com
Launch date	05.09.13	24.09.13	05.09.13	05.09.13	05.09.13
Build rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.1GHz Intel Core i7-4770S	3.2GHz Intel Core i5-3470	3.3GHz Intel Core i3-3220	3.1GHz Intel Core i7-3770S	2.9GHz Intel Core i5-3470S
RAM	16GB DDR3	8GB DDR3	4GB DDR3	16GB DDR3	4GB DDR3
Storage	2TB HDD + 32GB SSD	1TB HDD	1TB HDD	1TB HDD + 120GB SSD	1TB HDD
Screen	27in IPS touchscreen	27in IPS	23.6in TN	21.5in IPS touchscreen	27in TN touchscreen
Screen resolution	2560x1440	2560x1440	1920x1080	1920x1080	1920x1080
Graphics card	nVidia GeForce GT 750M	nVidia GeForce GTX 675MX	Intel HD Graphics 2500	Intel HD Graphics 4000	nVidia GeForce GT 630M
Video memory	2GB	1GB	N/A	N/A	2GB
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✗	✓	✓
USB	6x USB 3.0	4x USB 3.0	2x USB 3.0, 4x USB 2.0	4x USB 3.0, 2x USB 2.0	2x USB 3.0, 4x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✓	✓	✗	✗	✗
HDMI	yes	no	✓	✓	✓
Media card slot	✓	✓	✓	✓	✓
Optical drive	Blu-ray combo drive	None	DVD drive	Blu-ray combo drive	Blu-ray combo drive
Other	2.1Mp webcam, wireless keyboard and mouse, dual digital microphone array	1.3Mp webcam, wireless keyboard and mouse	Wireless keyboard and mouse, CyberLink software, Kaspersky Internet Security	Webcam, Microsoft Wireless Desktop 3000	2Mp webcam, DVB-T TV tuner, wireless keyboard and mouse, CyberLink software
Operating system	Windows 8	Mac OS X 10.9 Mavericks	Windows 8	Windows 8	Windows 8
Power consumption (idle/max)	54/84/220W	53/84/243W	34/42/92W	32/40/119W	44/53/110W
Sniper V2 Elite (Low/High/Ultra)	6/25/94fps	12/54/197fps	5/5/16fps	5/7/28fps	5/6/17fps
PCMark 7 score	6091	4141	3298	5195	3138
Dimensions	492x664x72mm	650x203x516mm	580x196x430-460mm	338x541x61mm	672x483x66mm
Weight	16kg	9.5kg	10.3kg	9kg	13kg
Warranty	1-year next-day in-home	1-year return-to-base	1-year return-to-base	2-year collect-and-return	2-year collect-and-return
FULL REVIEW	TINYURL.COM/KWZ4KLL	TINYURL.COM/A95Q9VY	TINYURL.COM/MEVSJ9D	TINYURL.COM/LQ4U8FW	TINYURL.COM/MUGFKQ7

HEAD TO [TINYURL.COM/PYWN4DA](http://tinyurl.com/pywn4da) FOR OUR DESKTOP PC BUYING ADVICE

Business PCs	 1	 2	 3	 4	 5
	Aria Gladiator Logic N200-3220M	Chillblast Fusion Opal	Wired2Fire Business Accelerate	Dino PC Synergy 4430	Eclipse Precision A856F85
Price	£509 inc VAT	£549 inc VAT	£689 inc VAT	£569 inc VAT	£519 inc VAT
Website	Aria.co.uk	Chillblast.com	Wired2fire.co.uk	Dinopc.com	Eclipsecomputers.com
Launch date	08.08.13	08.08.13	08.08.13	08.08.13	08.08.13
Build rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.3GHz Intel Core i3-3220 (dual-core)	3.2GHz Intel Core i5-4570 (quad-core)	3.4GHz Intel Core i5-4670 (quad-core)	3GHz Intel Core i5-4430 (quad-core)	3.6GHz AMD Trinity A8-5600K (quad-core)
RAM	8GB DDR3	8GB DDR3	8GB DDR3	8GB DDR3	8GB DDR3
Storage	500GB HDD + 80GB SSD	1TB HDD	120GB SSD	1TB HDD	1TB HDD
Motherboard	Gigabyte GA-B75M-D3H	Asus B85M-G	ASRock B85M-HDS	Gigabyte GA-H87M-HD3	Asus F2A85-M LE
CPU cooler	Arctic Cooling Alpine 11 GT Quiet	Standard Intel cooler	Standard Intel cooler	Standard Intel cooler	Standard AMD cooler
Power supply	Corsair 430W	CiT 500W	Xigmatek 400W	CiT 500W	Alpine 600W
Screen	21.5in AOC E2260SWDA	23.6in Iiyama X2377	2x 21.5in AOC E2260SWDA	23in Iiyama XB2380HS-B1	23in AOC i2369Vm
Screen resolution	1920x1080	1920x1080	1920x1080	1920x1080	1920x1080
Graphics	Intel HD Graphics 2500	Intel HD Graphics 4600	Intel HD Graphics 4600	Intel HD Graphics 4600	Integrated
Video memory	N/A	N/A	N/A	N/A	N/A
USB	2x USB 3.0, 4x USB 2.0	3x USB 3.0, 6x USB 2.0	2x USB 3.0, 8x USB 2.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Speakers	Not specified	Not specified	Not specified	Not specified	Not specified
Case	Cooler Master N200	CiT Fortress	In-Win Em040	CiT Templar	K2 Gamer
Keyboard	Microsoft Desktop 400 keyboard and mouse (wired)	Cherry J82-16001 keyboard, M-5450 mouse (wired)	Gigabyte K6800 keyboard, M6800 mouse (wired)	Logitech K120 keyboard, B110 mouse (wired)	Microsoft Optical Desktop 800 (wired)
Optical drive	24x DVD±RW	24x DVD±RW	DVD±RW	Samsung DVD±RW	Samsung DVD±RW
Operating system	Windows 7 Home Premium 64-bit	Windows 8 Professional	Windows 7 Professional 64-bit	Windows 7 Home Premium 64-bit	Windows 8 Professional
Bundled software	None	None	None	None	None
PCMark 7 overall score	3524	4257	5667	3458	2349
PCMark 7 Productivity score	4056	2685	5929	2529	1883
PCMark 7 Computational score	3321	21490	13651	9377	3899
Power consumption (idle/max)	27/69W	47/124W	37/135W	37/115W	34/145W
Warranty	1-year return-to-base, phone support	2-year collect-and-return, phone support	2-year return-to-base, phone support	3-year return-to-base, phone support	1-year return-to-base, phone support
FULL REVIEW	TINYURL.COM/OSW55A8	TINYURL.COM/KGGE98T	TINYURL.COM/PCSKWVS	TINYURL.COM/PF8LUXD	TINYURL.COM/MQFWJ3R

HEAD TO TINYURL.COM/PYWN4DA FOR OUR DESKTOP PC BUYING ADVICE

Chillblast

sales@chillblast.com 0845 45678 31

Best Desktop PC Brand 2013 - PCA

But don't just take our word for it...

- Four time winner of PC Pro Excellence Award!
- Four time winner of PC Advisor Best Desktop Brand!
- Builder of the World's Fastest PC!*
- Computer Shopper & Expert Reviews Best PC Manufacturer 2012



"The highest frame rates we've tested" - 9/10 - PC Advisor

FUSION PROBE



PC ADVISOR
★★★★★

Aerocool Dead Silence Case (6 colours)

Intel Core i5 4670K 4.4GHz CPU

Corsair H55 Cooler

Gigabyte GA-Z87N Motherboard

16GB 1600MHz DDR3 Memory

NVIDIA GeForce GTX 780 3GB

120GB Samsung 840 EVO SSD

2TB SATA 7200RPM Hard Disk

Corsair 750W PSU

Windows 8.1 64bit OS

Gigabyte Keyboard and Mouse

Iiyama X2377 23" IPS Monitor

£1299 inc VAT

EXCLUSIVE OFFERS FOR PCA READERS!

Check out our
FACEBOOK and
TWITTER for amazing
weekly competitions!

[f /chillblast](#) [t @chillblast](#)

FREE 8GB PEN DRIVE! USE CHECKOUT CODE **PCA0114PBE**

"SIMPLY BREATHTAKING! - 96.2%
OUTDOOR PHOTOGRAPHY

FUSION PHOTO OC LITE



Free Pen Drive!
USE CODE
PCAPENNY14

Corsair 200D Case
Intel Core i7 4770K CPU
Corsair H60 Cooler
Asus Z87-A Motherboard
16GB PC3-10666 DDR3 Memory
NVIDIA® GeForce GTX 650
120GB Samsung SSD
2 x 1TB SATA 7200RPM Hard Disks in RAID 1
Blu Ray ReWriter Optical Drive
Corsair 600W PSU
Card Reader Internal
Windows 8.1 64bit Operating System

£1249 inc VAT

INCREDIBLE VALUE FOR MONEY I7 PC!

FUSION ORION I7



SAVE
£50

USE CODE
PCA0114ORI

ACE Ecco 250 Case
Intel Core i7 4770 CPU
Intel Cooler
Asus B85M-G Motherboard
NVIDIA GeForce GT 620
16GB PC3-12800 DDR3 Memory
2TB SATA 7200rpm Hard Disk
24x DVD-RW Optical Drive
Zalman Ultra Low Noise 450W PSU
Card Reader Internal
Windows 8.1 64bit Operating System
Incredible Multimedia Performance

£799 inc VAT

PORTABLE GAMING POWER!

DEFIANT 13" LAPTOP



PC ADVISOR
★★★★★

FREE GAMING MOUSE

Portable 2.1kg Chassis **PCAMOU0114**
Intel Core i7 4700MQ Quad Core CPU
8GB DDR3 1600MHz Memory
13" 1920x1080 IPS Matte Panel
NVIDIA GeForce GTX 765 2GB Video Card
1000GB SSD/HDD HYBRID Hard Disk
802.11N Wireless & Bluetooth
Creative SoundBlaster Audio
Windows 8.1 64bit Operating System

Exceptional gaming laptop, awarded 9/10
by PC Advisor

£899 inc VAT

Terms and conditions are on the website. All trademarks are acknowledged. Pictures are for illustration only.
Prices are correct at time of going to press (22-01-14) E&OE

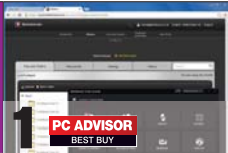
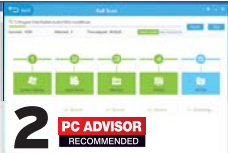



www.chillblast.com






* Chillblast won more awards in the leading IT press publications PC Pro, PC Advisor and Computer Shopper combined than any other retailer 2010-2013

** World's fastest PC as tested by PC Pro Magazine - <http://www.pcpro.co.uk/reviews/desktops/371152/chillblast-fusion-photo-oc-iv>






Family PCs	 1 PC ADVISOR BEST BUY	 2 PC ADVISOR RECOMMENDED	 3	 4	 5
	Chillblast Fusion Commando	Quiet PC Serenity Home Value	Dino PC Raging Lizard	CyberPower Ultra Scylla SE III	Computer Planet F2000
Price	£799 inc VAT	£696 inc VAT	£899 inc VAT	£699 inc VAT	£930 inc VAT
Website	Chillblast.com	Quietpc.com	Dinopc.com	Cyberpowersystem.co.uk	Computerplanet.co.uk
Launch date	04.07.13	04.07.13	04.07.13	04.07.13	04.07.13
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.2GHz Intel Core i5-4570	2.9GHz Intel Core i5-3475S	3.2GHz Intel Core i5-4570	4.2GHz AMD FX 4350	3.4GHz Intel Core i5-3570
RAM	16GB DDR3	16GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage	1TB HDD + 120GB SSD	500GB HDD hybrid SSD	1TB HDD + 128GB SSD	2TB HDD	2TB HDD + 120GB SSD
Motherboard	Asus B85M-G	Gigabyte GA-H61M-USB3V	Gigabyte GA-Z87M-HD3	Asus M5A78L-M/USB3	Gigabyte B75M-D3H
CPU cooler	Arctic Cooling Freezer 7 Pro	Standard Intel cooler	Standard Intel cooler	Standard AMD cooler	Arctic Cooling Freezer 7 Pro
Power supply	600W CIT	Zalman ZM450-GS 450W	Corsair VS450 450W	Cooler Master 500W	Cooler Master GX 600W
Screen	23in Iiyama X2377	Not supplied	23in AOC i2369Vm	24in BenQ GL2450E	23.6in Iiyama X2377
Screen resolution	1920x1080	N/A	1920x1080	1920x1080	1920x1080
Graphics	Zotac nVidia GeForce GTX 650 Ti	Intel HD Graphics 4000	Gigabyte nVidia GeForce GTX 650 Ti	MSI AMD Radeon HD 7770	Gainward nVidia GeForce GTX 660
Video memory	N/A	N/A	N/A	1GB	2GB
Connectivity	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet
USB	3x USB 3.0, 6x USB 2.0	2x USB 3.0, 6x USB 2.0	6x USB 3.0, 2x USB 2.0	2x USB 3.0, 6x USB 2.0	2x USB 3.0, 7x USB 2.0
Media card slot	None	None	Yes	Yes	Yes
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Speakers	2x Logitech LS220	None	None	None	None
Case	Cooler Master Force 500	Zalman ZM-T1	Xigmatek Asgard 382	Cooler Master Elite 430	Cooler Master Elite 335U
Keyboard	Logitech MK260	Gigabyte GK-KM7580	Logitech MK260	Logitech MK330	Logitech MK260
Optical drive	LG BD-ROM/DVD±RW	Sony DVD±RW	BD-ROM, DVD±RW	Lite-On BD-ROM/DVD±RW	TSSTcorp 24x DVD±RW
Operating system	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	None	None	None	None	None
Sniper V2 Elite score (Low/High/Ultra)	147/59/14fps	26/7/5fps	154/62/14fps	130/43/9fps	205/59/15fps
Alien vs Predator score (720p/1080p)	52/27fps	8/5fps	53/27fps	47/24fps	77/41fps
PCMark 7 score	6177	4464	6282	2957	6134
Warranty	2-year collect-and-return	2-year collect-and-return	3-year return-to-base	3-year return-to-base (1 year parts)	2-year return-to-base, 1-year collect-and-return
FULL REVIEW	TINYURL.COM/KF6G3T7	TINYURL.COM/KPE3BAD	TINYURL.COM/RAGLIZ	TINYURL.COM/QHT5X2H	TINYURL.COM/NEVWQ4U




HEAD TO TINYURL.COM/PYWN4DA FOR OUR DESKTOP PC BUYING ADVICE

Internet security	    				
	1	2	3	4	5
	Bitdefender Total Security	Qihoo 360 IS 4.3	Symantec Norton 360 2014	Kaspersky Pure 3.0 TS	Gdata TotalProtection 2014
Price	£55 inc VAT	Free	£60 inc VAT	£60 inc VAT	£50 inc VAT
Website	Bitdefender.co.uk	360safe.com	Norton.com/uk	Kaspersky.co.uk/pure	Gdatasoftware.com
Launch date	03.07.13	Not specified	11.10.13	15.03.13	Not specified
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Number of devices	3	Unlimited	3	3	3
Portable support	Android	Android	Android	Android	Android
Anti-malware	✓	✓	✓	✓	✓
Anti-spam	✓	x	✓	✓	✓
Firewall	✓	x	✓	✓	✓
Parental control	✓	x	✓	✓	✓
Online storage	2GB	N/A	2GB	2GB	N/A
50GB AV scan time	140 mins (1.39M files)	39 mins (68,100 files)	20 mins (176,000 files)	81 mins (334,000 files)	32 mins (8,800 files)
Scan rate (files/sec)	166	29	148	69	5
1GB copy with/without AV	41/48 secs	45/55 secs	43/69 secs	44/71 secs	52/54 secs
FULL REVIEW	TINYURL.COM/L9KNK29	TINYURL.COM/LY557M7	TINYURL.COM/LEZ8AHC	TINYURL.COM/N4ER2X2	TINYURL.COM/LZBQKEM







Antivirus	    				
	1	2	3	4	5
	Norton AntiVirus	Bitdefender Antivirus Pro	G Data AntiVirus	Kaspersky Anti-Virus	Trend Micro Titanium AV+
Price	£39 inc VAT	£24 inc VAT	£34 inc VAT	£39 inc VAT	£39 inc VAT
Website	Norton.com	Bitdefender.co.uk	Gdatasoftware.com	Kaspersky.co.uk	Uk.trendmicro.com
Launch date	Not specified	03.07.13	Not specified	30.10.13	Not specified
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Licence terms	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year
Signature-based detection	98.7%	97.5%	99.4%	95.7%	98.4%
Malware blocking (full)	96%	68%	84%	88%	88%
Malware blocking (partial)	0%	20%	4%	4%	8%
Clean-up of active malware	80%	80%	80%	80%	80%
On-demand scan speed	121 secs	126 secs	111 secs	103 secs	187 secs
On-access scan speed	272 secs	327 secs	336 secs	310 secs	249 secs
Interface design	Very good	Very good	Very good	Very good	Very good
FULL REVIEW	TINYURL.COM/4P5YCXP	TINYURL.COM/66SK77U	TINYURL.COM/6BFXWCS	TINYURL.COM/6HQA2WB	TINYURL.COM/4HUORV3









HEAD TO TINYURL.COM/MOAXSOW FOR OUR SECURITY BUYING ADVICE

Sub-£150 printers					
	1	2	3	4 PC ADVISOR RECOMMENDED	5
	Samsung Xpress M2070W	Pantum P2050	Brother HL-3140CW	HP Photosmart 7520	Canon Pixma MX525
Price	£130 inc VAT	£50 inc VAT	£140 inc VAT	£110 inc VAT	£83 inc VAT
Website	Samsung.com/uk	Pantum.com	Brother.co.uk	Hp.com/uk	Canon.co.uk
Launch date	20.08.13	03.12.12	25.02.13	12.09.12	07.02.13
Overall rating	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Technology	Mono laser	Mono laser	Colour laser	Colour inkjet	Colour inkjet
Max print resolution	1200x1200	1200x600	2400x600dpi	9600x2400	4800x1200
Actual print speed	B=17.1ppm	B=15.8ppm	B=15.9ppm C=8.6ppm	B=17.6ppm C=7.9ppm	B=11ppm C=5.5ppm
Scan/fax facilities	1200x1200 scans	None	None	1200x2400 scans	1200x2400 scans, fax
Supported interfaces	USB 2.0, 802.11b/g/n, NFC	USB 2.0	USB 2.0, 802.11b/g/n	USB 2.0, 802.11b/g/n, HP ePrint	USB 2.0, 802.11b/g/n, ethernet
Cost per page	B=3.8p	B=2.4p	B=2.3p C=11.1p	B=2.4p C=4.8p	B=3.5p C=5.5p
Media card/auto duplex	xx	xx	xx	✓✓	✓✓
Input capacity	150 sheets	150 sheets + manual	250 + 1 sheet	125 sheets + 20 tray + 25 ADF	100 sheets + 30 ADF
Dimensions	406x360x253mm	380x260x236mm	410x465x240mm	454x551x220mm	458x385x200mm
Weight	7.4kg	6.1kg	17.4kg	8.6kg	8.7kg
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/OYZKJKE	TINYURL.COM/C764SZ2	TINYURL.COM/P2P27TA	TINYURL.COM/98G9XTE	TINYURL.COM/ON28THH

£151+ printers					
	1 PC ADVISOR BEST BUY	2 PC ADVISOR GOLD	3 PC ADVISOR RECOMMENDED	4	5 PC ADVISOR RECOMMENDED
	Kyocera Mita FS-1320D	HP OfficeJet Pro X551dw	Canon i-Sensys LBP7780Cx	Samsung Xpress M2875FW	Lomond EvoJet 2 Office
Price	£176 inc VAT	£470 inc VAT	£440 inc VAT	£200 inc VAT	£50-£150 per month
Website	Kyoceramita.co.uk	Hp.com/uk	Canon.co.uk	Samsung.com/uk	Lomond.com
Launch date	29.07.10	23.01.13	28.12.11	25.03.13	Not specified
Overall rating	★★★★★	★★★★★	★★★★★	★★★★☆	★★★★☆
Technology	Mono laser	Colour inkjet	Colour laser	Mono laser	Colour laser
Max print resolution	1200x1200	2400x2400	9600x600	4800x600dpi	1600x1600
Actual print speed	B=26.1ppm	B=42.9ppm C=15.8ppm	B=23.2pp C=16.7ppm	B=21.4ppm	B=41.4ppm C=23.1ppm
Scan/fax facilities	None	None	None	1200dpi scanner, fax	None
Supported interfaces	USB 2.0	USB 2.0, ethernet, 802.11b/g/n	USB 2.0, ethernet	USB 2.0, ethernet, 802.11b/g/n	USB 2.0, ethernet
Cost per page	B=1.4p	B=1p C=4.3p	B=1.3p C=7.5p	B=1.7p	Variable
Media card/auto duplex	✓✓	x✓	x✓	x✓	xx
Input capacity	250 sheets	500 + 50 sheet	500 + 100 sheets	250 sheets + 1 sheet + 40 ADF	250 + 20 sheets
Dimensions	375x393x250mm	517x399x414mm	517x530x401mm	401x362x367mm	542x455x265mm
Weight	12kg	17.1kg	31kg	11.3kg	12.8kg
Warranty	2 years	1 year	1 year	3 years	1 year
FULL REVIEW	TINYURL.COM/6GG9UKV	TINYURL.COM/CZ05P65	TINYURL.COM/CCAPAJF	TINYURL.COM/QD5V3NF	TINYURL.COM/CLQAQ5V

HEAD TO TINYURL.COM/NJLUVUZ FOR OUR PRINTERS BUYING ADVICE

Blu-ray drives					
	1	2	3 	4	5
	Pioneer BDR-208EBK Retail	Pioneer BDR-208DBK OEM	LG BH16NS40	LG BP40NS20	Lite-On IHES112-115
Price	£61 inc VAT	£62 inc VAT	£70 inc VAT	£90 inc VAT	£54 inc VAT
Website	Pioneer.eu/uk	Pioneer.eu/uk	Uk.lge.com	Uk.lge.com	Liteonit.eu
Launch date	16.05.13	16.05.13	12.12.12	10.02.12	Not specified
Overall rating	★★★★★	★★★★★	★★★★★	★★★★☆	★★★★☆
Blu-ray speeds	15x -R, 14x -R DL, 2x -RE, 12x -ROM	15x -R, 14x -R DL, 2x -RE, 12x -ROM	16x -R, 12x -R DL, 12x -RE, 12x -ROM	6x -R, 6x -R DL, 2x -RE, 6x -ROM	12x -ROM
DVD speeds	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 16x -ROM	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 16x -ROM	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 12x -RAM, 16x -ROM	8x ±R, 6x ±R DL, 6x -RW, 8x +RW, 5x -RAM, 8x -ROM	8x ±R, 8x ±R DL, 6x -RW, 8x +RW, 8x -ROM
Max storage	128GB	50GB	50GB	100GB	8.5GB
Interface type	SATA (internal)	SATA (internal)	SATA (internal)	USB 2.0 (external)	SATA (internal)
Label technology	None	None	LightScribe	None	None
Software	ArcSoft TotalMedia Extreme	None	CyberLink Blu-ray Suite	PowerDVD, PowerProducer	None
Dimensions	148x180x42mm	148x180x42mm	146x170x41mm	160x153x22mm	158x145x22mm
Weight	740g	740g	749g	380g	700g
Warranty	1 year	1 year	1 year	1 year	2 years
FULL REVIEW	TINYURL.COM/LD47X7K	TINYURL.COM/LD47X7K	TINYURL.COM/8YTUJEF	TINYURL.COM/BS8UAFF	TINYURL.COM/8SYECMW






Wireless routers					
	1 	2 	3	4 	5
	Apple AirPort Extreme	TP-Link Archer C7	D-Link N600	Asus RT-AC68U AC1900	TP-Link TL-WDR4900
Price	£169 inc VAT	£105 inc VAT	£60 inc VAT	£189 inc VAT	£80 inc VAT
Website	Apple.com/uk	Tp-link.com	Dlink.com	Uk.asus.com	Tp-link.com
Launch date	10.06.13	16.04.13	09.07.12	22.10.13	25.12.12
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Standards supported	802.11b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n	802.11a/b/g/n/ac	802.11a/b/g/n
Frequency modes	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)
Antennae	6x internal	3x external, 3x internal	2x internal	3x external, 3x internal	3x external, 3x internal
128bit/256bit WEP	✓ x	✓ x	✓ x	✓ x	✓ x
Modem/Parental Control	x✓	x✓	x✓	x✓	x✓
Firewall	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI
Ports	Gigabit WAN, 3x gigabit LAN, USB	Gigabit WAN, 4x gigabit LAN, 2x USB	Gigabit WAN, 4x gigabit LAN, USB	Gigabit WAN, 4x gigabit LAN, 2x USB	10/100 WAN, 4x 10/100 LAN, 2x USB
Average power use	Not tested	Not tested	Not tested	Not tested	Not tested
Throughput (near, far, ac)	124, 105, 578/540Mbps	110, 89, 505/468Mbps	142, 115Mbps, N/A	98, 69, 610/570Mbps	127, 111Mbps, N/A
Dimensions, weight	98x168x98mm, 945g	32.5x243x160mm, 508g	111x93x145mm, 330g	160x83x220mm, 640g	243x161x33mm, 1.1kg
Warranty	1 year	3 years	1 year	2 years	1 year
FULL REVIEW	TINYURL.COM/MFDLLSC	TINYURL.COM/KKJMPCE	TINYURL.COM/9LGFF8Y	TINYURL.COM/K4ZATKV	TINYURL.COM/MUXCBNM






HEAD TO TINYURL.COM/PDYZU8D FOR OUR PERIPHERALS BUYING ADVICE

NAS drives	1	2	3	4	5
	Synology DS413j	Qnap TS-421	Synology DS1813+	Qnap TS-1079 Pro	Zyxel NSA325
Price	£270 inc VAT (diskless)	£387 inc VAT (diskless)	£740 inc VAT (diskless)	£2,265 inc VAT (diskless)	£95 inc VAT (diskless)
Website	Synology.com	Qnap.com	Synology.com	Qnap.com	Zyxel.co.uk
Launch date	04.09.12	27.03.13	23.04.13	01.01.12	09.01.12
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Drive bays	4	4	8	10	2
Processor	1.6GHz Marvell mv6282	2GHz Marvell single-core ARM	2.13GHz Intel Atom D2700 dc	3.3GHz Intel Core i3-2120	1.6GHz processor
Memory	512MB DDR3	1GB DDR3	2GB DDR3	2GB DDR3	512MB DDR2
Remote access	✓	✓	✓	✓	✓
eSATA	*	✓	✓	✓	*
USB port	2x USB 2.0	2x USB 3.0, 2x USB 2.0	2x USB 3.0, 4x USB 2.0	2x USB 3.0, 4x USB 2.0	2x USB 2.0
Raid options	0/1/5/6/10/JBOD	0/1/5/6/10/JBOD	0/1/5/6/10/JBOD	0/1/5/5+hs/6/6+hs/10/10+hs/JBOD	0/1/JBOD
Software	DSM 4.1	Backup Station	DSM 4.3	Qnap QBack, MyCloudNAS	zPilot
Dimensions	184x168x230mm	177x180x235mm	175x340x233mm	218x327x321mm	108x205x147mm
Weight	2kg	3kg	5.2kg	9.8kg	1.8kg
Warranty	2 years	2 years	3 years	2 years	1 year
FULL REVIEW	TINYURL.COM/PL8XM8S	TINYURL.COM/MCYWUB8	TINYURL.COM/PWO4M6J	TINYURL.COM/PAAYD4Y	TINYURL.COM/7B9EPW8






USB drives	1	2	3	4	5
	WD My Passport Edge for Mac	G-Technology Professional	LaCie Little Big Disk TB	G-Technology Thunderbolt	Toshiba Stor.E Basics
Price	£60 inc VAT	£250 inc VAT	£919 inc VAT	£599 inc VAT	£100 inc VAT
Website	Wdc.com/en	G-technology.com	Lacie.com/uk	G-technology.com	Toshiba.co.uk
Launch date	30.08.12	Not specified	26.01.12	30.05.12	07.03.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Capacity tested	500GB	4TB	1TB	8TB	2TB
Capacity range	500GB	2TB to 4TB	512GB to 2TB	4TB to 8TB	320GB to 2TB
Disk size	2.5in	3.5in	2.5in	3.5in	2.5in
Spin speed	5400rpm	7200rpm	5400rpm	7200rpm	5400rpm
Transfer speed	94MB/s (USB 3.0)	N/A	635MB/s	329MB/s	94Mb/s (USB 3.0)
Encryption	Password protection	None	None	None	None
Other interfaces	None	FireWire 800	None	None	none
Software	WD utilities	None	LaCie Backup Assistant	None	None
Dimensions	112x83x11mm	235x130x46mm	40x140x85mm	235x130x85mm	119x79x21mm
Weight	164g	1.35kg	650g	2.3kg	215g
Warranty	3 years	3 years	1 year	3 years	1 year
FULL REVIEW	TINYURL.COM/BMG7SW9	TINYURL.COM/NV7F32F	TINYURL.COM//KRCL3VZ	TINYURL.COM/CXEF6MH	TINYURL.COM/LBHC8EL






HEAD TO TINYURL.COM/099Z6ZO FOR OUR STORAGE BUYING ADVICE

SSDs					
	1 PC ADVISOR GOLD	2 PC ADVISOR RECOMMENDED	3 PC ADVISOR RECOMMENDED	4 PC ADVISOR RECOMMENDED	5
	Samsung 840 EVO	Plextor M5 Pro	Crucial M500	Samsung 840 Pro	Integral 512GB
Price	£370 inc VAT	£165 inc VAT	£270 inc VAT	£350 inc VAT	£277 inc VAT
Website	samsung.com/uk	Plextor.com	Crucial.com/uk	Samsung.com/uk	Integralmemory.com
Launch date	31.07.13	31.08.12	08.03.13	12.10.12	17.02.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Capacity tested	750GB	256GB	480GB	512GB	512GB
Price per GB	49p	64p	56p	68p	54p
Memory cache	1GB LPDDR2	512MB DDR3	512MB DDR3	512MB LPDDR2	N/A
Controller	Samsung MEX (3-core ARM)	Marvell 88SS9187	Marvell 88SS9187	Samsung MDX (3-core ARM)	Phiso
Encryption	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit	None
Flash	Samsung 19nm Toggle NAND	Toshiba Toggle NAND	Micron 20nm MLC NAND	Samsung 21nm Toggle NAND	Toshiba NAND
Firmware updated via	SSD Magician for Windows	ISO boot disc	ISO boot disc	SSD Magician for Windows	N/A
ATTO peak sequential	R: 554MB/s; W: 537MB/s	R: 547MB/s; W: 457MB/s	R: 539MB/s; W: 433MB/s	R: 562MB/s; W: 519MB/s	R: 557MB/s; W: 511MB/s
CDM peak IOPS	104k (read)	103.3k (read)	89.8k (read)	103.8k (read)	92.8k (read)
AS SSD (points)	1141	1124	1038	1094	1057
Warranty	5 years	5 years	3 years	5 years	2 years
FULL REVIEW	TINYURL.COM/L5EDQOY	TINYURL.COM/PTYGG27	TINYURL.COM/M2NCSMJ	TINYURL.COM/OU4LEJG	TINYURL.COM/PN5Z67G

Projectors					
	1	2	3	4 PC ADVISOR RECOMMENDED	5
	Epson EB-1945W	BenQ W1070	Asus P2B	ViewSonic PJD7820HD	Dell M900HD
Price	£1,342 inc VAT	£635 inc VAT	£450 inc VAT	£650 inc VAT	£754 inc VAT
Website	Epson.co.uk	Benq.co.uk	Asus.com/uk	Viewsoniceurope.com/uk	Dell.co.uk
Launch date	12.06.12	12.11.12	08.08.13	21.10.13	03.12.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Projection technology	3LCD	DLP	DLP	DLP	DLP
Resolution (pixels)	1280x800	1920x1080	1280x800	1920x1080	1280x800
Brightness ¹ , Contrast	4200, 3000:1	2000, 10000:1	350, 3500:1	3000, 15000:1	900, 700:1
Image size	280in	235in	20-120in	300in	80in
Supported aspect ratios	16:10, 16:9, 4:3	16:9	16:10, 16:9, 4:3	16:9, 4:3	16:10, 16:9, 4:3
Noise levels (dB)	37 (29 eco)	33 (30 eco)	32 (24 eco)	35 (29 eco)	38 (34 eco)
Connections	VGA, HDMI, DP, CM, USB, ET	VGA, HDMI, CM, USB	HDMI, USB, microSD	VGA, HDMI, CM, USB	HDMI, USB, WiDi
Lamp/lamp life	Not supplied/2500 hrs	240W/6000 hrs	LED/30000 hrs	Not supplied/5000 hrs	LED/30000 hrs
Dimensions	377x271x108mm	312x244x109mm	143x130x35mm	268x221x84mm	232x164x43mm
Weight	3.9kg	2.65kg	1.4kg	2.1kg	1.59kg
Warranty	5 years	2 years	1 year	3 years	1 year
FULL REVIEW	TINYURL.COM/CP95P7G	TINYURL.COM/LXADR7Q	TINYURL.COM/JWV6PD6	TINYURL.COM/D2H04CV	TINYURL.COM/MAXQRG3











HEAD TO TINYURL.COM/099Z6ZO FOR OUR STORAGE BUYING ADVICE

Sub-£150 graphics cards					
	1	2	3	4	5
	MSI GTX 650 Ti OC Boost	Sapphire HD 7770	Sapphire Radeon HD 7790	MSI GeForce GTX 650	Sapphire Radeon HD 7750
Price	£135 inc VAT	£90 inc VAT	£100 inc VAT	£80 inc VAT	£80 inc VAT
Website	Uk.msi.com	Sapphiretech.com	Sapphiretech.com	Uk.msi.com	Sapphiretech.com
Launch date	28.03.13	20.11.12	07.04.13	16.11.12	23.08.12
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Graphics processor	nVidia GTX 650 Ti Boost	AMD Radeon HD 7770	AMD Radeon HD 7790	nVidia GeForce GTX 650	AMD Radeon HD 7750
Installed RAM	2GB GDDR5	1GB GDDR5	1GB GDDR5	1GB GDDR5	1GB GDDR5
Memory interface	192-bit	128-bit	128-bit	128-bit	128-bit
Core/memory clock	1033MHz/1502MHz	1GHz/1125MHz	1GHz/1.5GHz	1071MHz/1250MHz	800MHz/1125MHz
Ramdac	400MHz	400MHz	400MHz	400MHz	400MHz
Stream processors	768	640	896	384	512
Power connectors	1x 6-pin	1x 6-pin	1x 6-pin	1x 6-pin	None
Interface	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express
DirectX	11	11.1	11	11	11
Digital interface	2x DVI, HDMI, DisplayPort	DVI, HDMI, Mini DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, Mini HDMI	DVI, HDMI, DisplayPort
Warranty	3 years	3 years	3 years	3 years	2 years
FULL REVIEW	TINYURL.COM/DYE3OW8	TINYURL.COM/BWJ7BL9	TINYURL.COM/BPRUYS5	TINYURL.COM/AKT2XOM	TINYURL.COM/7ZB5OE3

£151+ graphics cards					
	1	2	3	4	5
	HIS Radeon R9 280X	MSI Radeon R9 270X	MSI GeForce GTX 760 OC	Asus GeForce GTX 770 2GB	Asus GeForce GTX 780 3GB
Price	£270 inc VAT	£180 inc VAT	£190 inc VAT	£280 inc VAT	£430 inc VAT
Website	Hisdigital.com	Uk.msi.com	Uk.msi.com	Uk.asus.com	Uk.asus.com
Launch date	Not specified	11.10.13	24.06.13	28.05.13	28.06.13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Graphics processor	AMD Radeon R9 280X	AMD Radeon R9 270X	nVidia GeForce GTX 760	nVidia GeForce GTX 770	nVidia GeForce GTX 780
Installed RAM	3GB GDDR5	2GB GDDR5	2GB GDDR5	2GB GDDR5	3GB GDDR5
Memory interface	384-bit	256bit	256-bit	256-bit	384-bit
Core/memory clock	850MHz/1.5GHz	1120MHz/1.4GHz	1006MHz/1502MHz	1058MHz/1752MHz	863MHz/1502MHz
Ramdac	400MHz	400MHz	400MHz	400MHz	400MHz
Stream processors	2048	1280	1152	1536	2304
Power connectors	2x 8-pin	2x 6-pin	1x 6-pin, 1x 8-pin	1x 6-pin, 1x 8-pin	1x 6-pin, 1x 8-pin
Interface	PCI Express	PCI Express	PCI Express	PCI Express	PCI Express
DirectX	11	11	11	11	11
Digital interface	DVI, HDMI, 2x Mini-DP	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort
Warranty	2 years	2 years	2 years	3 years	3 years
FULL REVIEW	TINYURL.COM/OWVAP37	TINYURL.COM/OYA2DFJ	TINYURL.COM/OPSNB5K	TINYURL.COM/OAG6277	TINYURL.COM/PN43VTL

HEAD TO TINYURL.COM/M7DF9RF FOR OUR GAMING BUYING ADVICE

Sub-£200 flat-panel displays					
	1 	2 	3 	4 	5 
	Samsung S24C650PL	Dell S2440L	ViewSonic VP2365-LED	BenQ GW2750HM	Hanns-G HL249DPB
Price	£182 inc VAT	£198 inc VAT	£171 inc VAT	£200 inc VAT	£116 inc VAT
Website	Samsung.co.uk	Dell.co.uk	Viewsoniceurope.com/uk	Benq.co.uk	Hannsg.com
Launch date	08.01.13	15.01.13	05.08.11	04.05.12	01.03.12
Overall rating	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Screen size	23.6in	24in	23in	27in	23.6in
Panel type	Plane-to-line switching	Vertical alignment	In-plane switching	Vertical alignment	Twisted nematic
Native resolution	1920x1080 (93ppi)	1920x1080 (92ppi)	1920x1080 (96ppi)	1920x1080 (82ppi)	1920x1080 (93ppi)
Pixel pitch	0.27mm	0.28mm	0.27mm	0.31mm	0.27mm
Brightness	250cd/m ²	239cd/m ²	238cd/m ²	313cd/m ²	247cd/m ²
Static contrast ratio	760:1	1200:1	681:1	1530:1	740:1
Response time	5ms	6ms	6ms	6ms	5ms
Ports	HDMI, DP, VGA, USB	HDMI, VGA	DVI	HDMI, DVI, VGA	DVI
Dimensions	555x487x224mm	568x191x418mm	548x433x250mm	654x489x191mm	563x211x403mm
Weight	5.5kg	3.6kg	5.4kg	5.6kg	3.8kg
Warranty	3 years	3 years	3 years	3 years	3 years
FULL REVIEW	TINYURL.COM/K969YMH	TINYURL.COM/CXWJJLM	TINYURL.COM/5WMJLR9	TINYURL.COM/BQKT65S	TINYURL.COM/C95859A

£201+ flat-panel displays					
	1 	2 	3 	4 	5 
	BenQ GW2760HS	Hazro HZ27WIE	LG 29EA93	AOC Q2963PM	LG 23ET83V
Price	£216 inc VAT	£299 inc VAT	£360 inc VAT	£330 inc VAT	£230 inc VAT
Website	Benq.co.uk	Hazro.co.uk	Uk.lge.com	Aoc-europe.com/en	Lg.com/uk
Launch date	Not specified	Not specified	19.12.12	02.03.13	24.01.13
Overall rating	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Screen size	27in	27in	29in	29in	23in
Panel type	A-MCA	AH-IPS	In-plane switching	AH-IPS	IPS touchscreen
Native resolution	1920x1080 (82ppi)	2560x1440 (110ppi)	2560x1080 (96ppi)	2560x1080 (96ppi)	1920x1080 (96ppi)
Pixel pitch	0.31mm	0.23mm	0.26mm	0.27mm	0.27mm
Brightness	300cd/m ²	390cd/m ²	300cd/m ²	240cd/m ²	144cd/m ²
Static contrast ratio	950:1	540:1	560:1	530:1	420:1
Response time	4ms	6ms	5ms	5ms	5ms
Ports	HDMI, DVI, VGA	HDMI, DVI, DP, VGA	3x USB 3.0, 2x HDMI, DVI, DP	HDMI, DVI, DP, VGA	2x HDMI, VGA, USB
Dimensions	472x191x623mm	653x206x479mm	700x209x387mm	714x214x388mm	554x208x399mm
Weight	4.5kg	N/A	5.2kg	6.9kg	5.1kg
Warranty	2 years	2 years	2 years	3 years	3 years
FULL REVIEW	TINYURL.COM/NF3WVFY	TINYURL.COM/CTR7AAW	TINYURL.COM/CTR7AAW	TINYURL.COM/NXDAGMK	TINYURL.COM/K8WBR7R

HEAD TO TINYURL.COM/LNLDBJX FOR OUR DIGITAL HOME BUYING ADVICE



Five Macs that changed computing history

It's the 30th anniversary of the first Apple Mac - the computer that changed everything and spawned an industry. It also marks the 30-year anniversary of our sister title *Macworld*, the magazine founded to follow Apple's then new and exciting computer and the precursor to *PC Advisor*. Face facts PC fans: without the Mac we wouldn't be here now.

Here we pick out the five most important Macs of all time.

1. Original Mac (1984)

Without the Mac or something like it the computing world we know today would not exist.

We consider PCs, laptops, smartphones and tablets to be consumer devices rather than technical equipment requiring a manual. We expect everything from TVs to cash points to come with a graphical user interface, speak our language and understand our needs. The Mac was at the forefront of that movement.

As clunky and expensive as it was - about \$5,000 at today's prices - the original Mac was the first mass-market personal computer featuring a GUI and mouse. An important staging post in the development of personal computing.

It had a tortured design process, and the launch with its Ridley Scott Superbowl advert is almost as famous as the device itself became. But never forget just how important was the original Mac. It started everything.

2. The first iMac (1998)

Without this Mac it's unlikely that Apple would still be around. In 1997 Steve Jobs was brought back to Apple to save his beloved company, a process that started with OS X and the first iMac.

You know the one - the all-in-one Mac with translucent blue plastic. Introduced in 1998, the iMac was a runaway success and a design classic. It also standardised with the rest of the PC industry by including USB ports and a CD-ROM drive.

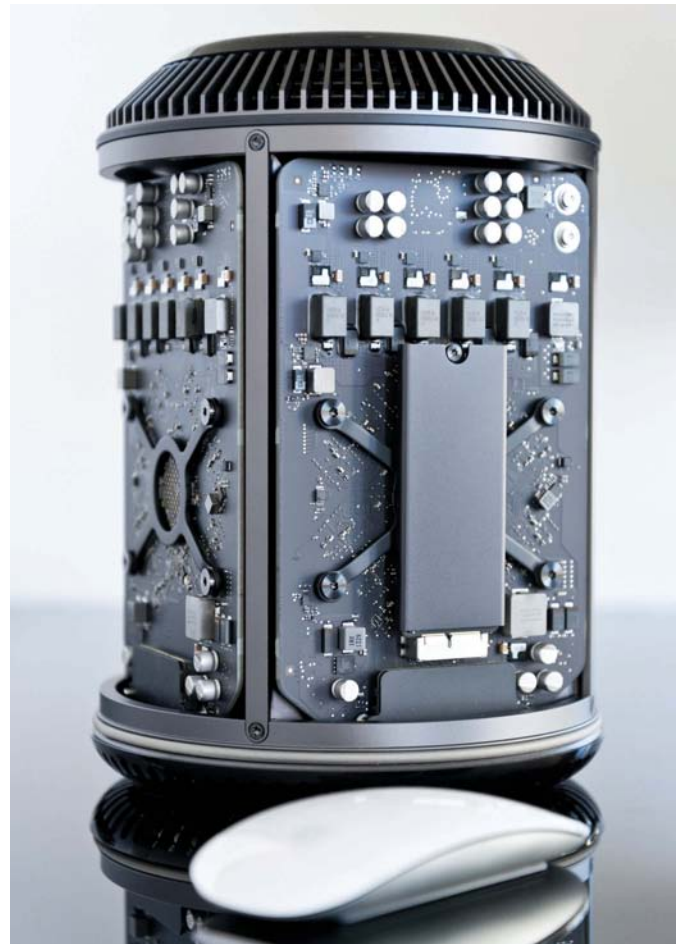
More importantly, it looked and worked like something humans wanted to own. In a world of complicated and unreliable Windows boxes, the cute iMac just worked. It was a combination that proved to be very successful with 800,000 units sold in just 139 days.

This icon of the Mac world did two other critical things: it put Apple back in to profit, and it cemented Steve Jobs' role as the undisputed leader of Apple, which in turn allowed him to push on with other key products, such as the iPad.

3. The first MacBook Pro (2006)

It seems strange now that until 2006 Apple computers didn't run Intel architecture. In practical terms this had performance implications. More importantly, it meant software makers found it difficult to port their wares to Macs. You know how Macs are the only computers that run both OS X and Windows? That wouldn't be the case without Intel.

The MacBook Pro was the first portable Intel Mac. It remains a hugely popular and successful product line. But there's more to it than that. Look at a timeline of Mac models and the Power Mac G[x] and Mac Pro series morphs seamlessly into the MacBook line. MacBooks in many ways replaced desktop Power Macs. The Mac Pro is now the niche product, and the MacBook is the Mac people buy.



With the MacBook Pro, Apple not only moved to Intel, but perfected the move to the portable power of laptops before Windows PC makers did. As Apple does when it works best, the MacBook Pro told the public what it wanted before the public knew it wanted it. Every high-end laptop that followed owes a debt to the MacBook Pro.

4. The original MacBook Air (2008)

The MacBook Air is two years older than the iPad and it's still cutting-edge. Go to a PC store and you'll see rows of 'Ultrabooks', evidence of how far ahead of its time was the Air. Intel and Microsoft are only now getting PC makers to catch up, and paying them to do so.

Six years on the MacBook Air is the best thin-and-light laptop there is, offering true portable power in an iconic and beautiful shell. Few computers are so ground-breaking as to invent a category.

5. The new Mac Pro (2013)

Where do you go when you are at the top? The new Mac Pro shows innovation is still at the heart of Apple. As powerful a workstation as you could need, in a small and stylish device.

It puts true power into a shell that wouldn't look out of place in any home. And in doing so it offers up a glimpse of the PC's future. Not a device for all users, but a niche tool for those who need power. ☒



GLADIATOR VIPER GAMING SERIES

powered by
GIGABYTE™



FX-VIPER 4350

CPU:
AMD FX-4350 4.2GHz Quad Core
GRAPHICS:
AMD R7-260X 2048MB GDDR5
MEMORY:
8GB 1600MHz DDR3
STORAGE:
2TB SATA III Hard Drive
Operating System:
Microsoft Windows 8.1

£565.00
Inc VAT

QUICK CODE: #58640



FX-VIPER 6350

CPU:
AMD FX-6350 4.4GHz O.C. 6 Core
GRAPHICS:
AMD R9-270X 2048MB GDDR5
MEMORY:
8GB 1600MHz DDR3
STORAGE:
120GB Samsung 840 EVO SSD
1TB SATA III Hard Drive

£685.00
Inc VAT

QUICK CODE: #58553



FX-VIPER 8320

CPU:
AMD FX-8320 4.4GHz O.C. 8 Core
GRAPHICS:
AMD R9-280X 3072MB GDDR5
MEMORY:
8GB 1600MHz DDR3
STORAGE:
120GB Samsung 840 EVO SSD
2TB SATA III Hard Drive

£885.00
Inc VAT

QUICK CODE: #58641



FX-VIPER 8350

CPU:
AMD FX-8350 4.4GHz O.C. 8 Core
GRAPHICS:
AMD R9-290 4096MB GDDR5
MEMORY:
8GB 1600MHz DDR3
STORAGE:
120GB Samsung 840 EVO SSD
2TB SATA III Hard Drive

£1020.00
Inc VAT

QUICK CODE: #58642

* System prices Exclude Delivery



Intel i5 4670K 3.4GHz

£175.48 **QUICK CODE:**
Inc VAT **#55828**

* Web Only Orders (Limited Stock)

MSI GTX760 2048MB GPU

£198.26 **QUICK CODE:**
Inc VAT **#57087**

* Web Only Orders (Limited Stock)



DELL 24" IPS MONITOR

£225.00 **QUICK CODE:**
Inc VAT **#45875**

* Web Only Orders (Limited Stock)

ARIA
SUPER SPECIALS

www.aria.co.uk

Give us a call Mon-Fri on: 0844 999 2499
Or visit our Outlet Mon-Sat in Manchester.



aria pc
TECHNOLOGY

123-REG YOUR DOMAINS HERO!

CAPTAIN 123-REG SAYS...

RELAX...
WE'RE THE UK'S **NUMBER ONE**,
SO YOU'RE IN SAFE HANDS!

SUPERCHARGE YOUR WEBSITE WITH US!

WHEN CHOOSING A DOMAIN, DON'T SETTLE FOR 2ND BEST.
WITH 123-REG YOU CAN ALWAYS GET THE DOMAIN YOU WANT.

SUPER PRODUCTS AND SUPER SERVICE

✓ **DOMAIN BACKORDERS**

OUR LIGHTNING FAST REACTIONS LET YOU GRAB THE DOMAIN
YOU'VE ALWAYS WANTED BUT COULDN'T GET

✓ **PREMIUM DOMAINS**

SUPERSIZE YOUR BUSINESS WITH A HIGH VALUE DOMAIN
THAT REALLY STANDS OUT

✓ **NEW GTLD'S COMING SOON - OVER 1,500 OF THEM!**

CHOOSE YOUR SUPER ONLINE IDENTITY WITH A NEW
GTLD DOMAIN EXTENSION E.G. .WEB, .APP...
SEE ALL THE CHOICES AT GTLD.123-REG.CO.UK

SUPERSIZE YOUR BUSINESS NOW!
CHECK OUT WWW.123-REG.CO.UK / SUPER

123-reg.co.uk