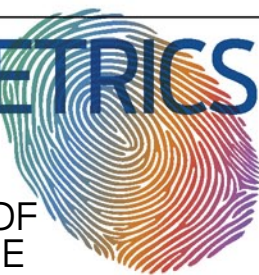


# PC & TECH AUTHORITY

TECH ADVICE YOU CAN TRUST

## BIOMETRICS

INSIDE THE  
PERSONAL  
SECURITY OF  
THE FUTURE



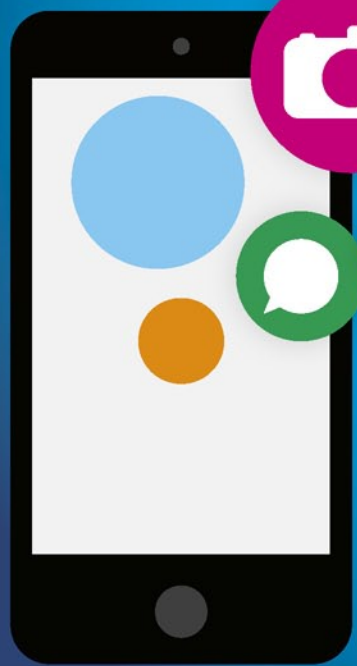
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DELIVERED THE  
GREATEST EVER  
SMARTPHONE?



**10**  
TABLETS  
ON TEST

# THE APP ALIST



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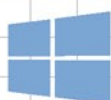
## WD BLACK2 DUAL DRIVE

REVIEWED:  
THE CLEVEREST  
SSD/HDD COMBO  
WE'VE EVER SEEN!



## HOW TO:

UPGRADE FROM  
WINDOWS XP



MAKE THE MOST OF  
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MANAGE YOUR TIME  
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## Tech advice you can trust!

- Our tests are performed by experienced reviewers in our Labs under the supervision of Editor John Gillooly
- Our brand new benchmarks have been tailor-made to reflect real-world computing needs
- We put tech through its paces – seriously. From processing power to battery life, from usability to screen brightness, our tests are exhaustive
- We will always offer an honest and unbiased opinion for every review



# 2014: THE NETBOOK STRIKES BACK(ISH)

**A**s we come into 2014, the unending roundabout of new product announcements churns with no regard for seasonality. By the time you read this CES will be underway, and we can already smell the onslaught of weird and wonderful attempts to tabletise and/or revive the PC.

The one term that I wish we could leave behind in 2013 is hybrid. It will forever be a year where the humble laptop twisted, turned and stretched desperately in an attempt to rail in the iPad. Yet decent hybrids were thin on the ground, with most products feeling like the results of thumb twiddling research and development departments desperately throwing any quirk of design at a laptop in the hopes it will prove the missing link in the ongoing success of the PC business.

Now that Intel is rolling out its Silvermont cored Atom CPUs, expect to see a new generation of netbookesque hybrids running full copies of Windows 8.1 vying for your attention. We doubt any of these will prove a true iPad killer, but we learned a long time ago to trust the laws of probability, and with so many weird and wonderful designs spewing out of factories, something may just push the right buttons.

In other news, *PC&TA* is starting 2014 with a new home at nextmedia. It is an exciting change, and one that David talks about in more detail in his Labs column on page 38.

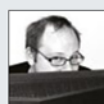
**John Gillooly**  
[ejgillooly@nextmedia.com.au](mailto:ejgillooly@nextmedia.com.au)

## THE TEAM...



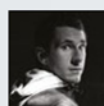
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I'm looking forward to three whole weeks of holiday, where I'll sit back, relax and not play any games for a change.



**Video Producer**  
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[T @MrJosh86](https://twitter.com/MrJosh86)

Finally, this month should see Steam Machines unveiled. 2014 is shaping up as a fascinating year for the PC.



**Art Director**  
**David West**

I'm randomly changing the magazine templates before regular designer Tim returns. I make my fun where I can.

## CONTACT US...

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Also, don't forget to check out the iPad version, packed with exclusive interactive content complementing the regular magazine. Here's a sample of what you can expect:

► **Video:** Get video tutorials, game trailers and more

► **Image Galleries:** Get a better look at some of the products reviewed

► **360 View:** Get up close with tech from every angle.

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Z87-G41 PC Mate



B85M-G43

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# INBOX

IF YOU HAVE A STORY OR POINT TO MAKE, SEND IT IN! TELL US YOUR ANECDOTES, OPINIONS & TALES OF WOE



## Getting in touch

### MAIL

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com.au

### EMAIL

inbox@pcand  
techauthority.com.au  
Please limit letters  
to 200 words, where  
possible. Letters may be  
edited for style and to a  
more suitable length.

people within Government who've been brought up in an institution. Remember when we were at school and studying science? We used to have to write theories and then go and either prove or disprove that theory based on what life actually allowed us to do. Here-in lies the problem: many administrators will try to force life to abide by their theories, rather than admit their theories (policies) are in fact incorrect and do not work. Too many Joffreys and not enough Eddards. We need government, we need leaders. We just don't need sociopathic ones.

**L. Hobbs**

**John Gillooly says:** Interesting theory!

## AMD LOVE

Darien Graham Smith says to upgrade older laptops to USB3 with a PCIe card. I'm afraid this is unlikely to work on many laptops. I have a 2008 HP DV6 Core i7 16in which works well, 500GB HDD 1GB full HD graphics, has everything I need except USB3. So I bought said PCIe USB 3 card. It works okay, except only at USB2 speeds. It also has only enough power to run USB3 memory sticks; hard drives need external power, which bus-powered USB3 drives don't have. The PCIe card has a power slot which can be connected to a USB2 port - the USB3 drives then work, but at USB2 speeds. The fine print in the USB3 PCIe card instructions says "requires PCIe express version 2". My notebook has version 1. By the time version 2 came out most notebooks large enough to have a PCIe slot also had USB3!

**S. Pugh**

**John Gillooly says:** I've rarely seen the word USB used so many times! But thanks for the letter.



## LETTER OF THE MONTH

This month's letter of the month will receive the STM HOOD laptop backpack thanks to the guys at STM.  
[www.stmbags.com](http://www.stmbags.com)

## TOP SITE COMMENTS

Yeah looks awful to me. I don't understand the need for curved/flexi displays on a 5 inch device. Large, superwide displays for sure, but not on a phone thanks.

**Chris Rowe on Apple's curved screen patent**  
Web ID: 367230

Is Microsoft listening to its customers now? I will believe it when I see it!

**j876 doesn't believe Microsoft will bring back the Start Menu**  
Web ID: 367214

God, I hope my 580'll run it.

**Nchalada really wants to play The Division.**  
Web ID: 367063

My family lives in the UK, this program is absolutely fantastic. I don't have to painfully explain to my family how to fix problems, I log in and do it.

**FabMan\_UK on TeamViewer 9 - which he appears to like**  
Web ID: 366450

Woah. Looks like they're getting serious. They've halted work on Battlefront to fix the bugs.

**Duper on bug hunting in BF4**  
Web ID: 366268

It's such a first-world problem, but my goodness it's such a stick in my craw when companies don't comply with the USB standards for orientation of the port [I'm looking at YOU Razer!]

**edenist has serious feels about USB**  
Web ID: 366571

**Want to read more? Go to [www.pcandtechauthority.com.au](http://www.pcandtechauthority.com.au) and search for the Web ID. And check out the Atomic forums: <http://forums.atomicmpc.com.au>**

## LETTER OF THE MONTH

Just read your article on BitTorrent and downloaded TV shows.

Whilst trying not to get too abstract, one of the things few people think about is not whether or not something is illegal, but why it is illegal in the first place. The fact remains that laws create crimes, as you cannot have a "crime" without a law in existence to be broken in the first place.

In this sense, BitTorrent is allowing people to "break the law" *even though* there is no way of proving that downloading is harming industries. How do they know these people who have downloaded shows were going to spend money on them anyway?

In fact, I think it's helping industries make better quality television because I know there are people out there going out and buying boxed set Blu-rays of TV shows because they liked them so much even though they may have downloaded them in the first place. How many people downloaded the first season of Game of Thrones and then went out and bought the Blu-ray set because they loved the show so much? Or did the same with Breaking Bad because they wanted to have all the "Behind the Scenes" and extras that come with it? Sure, they could DL those too but I bet you any amount of money there have been sales made because of those DL's and hardcore fandom.

The problem, though, is that there are

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FEBRUARY  
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# TECH NEWS

LATEST TRENDS AND PRODUCTS IN THE WORLD OF TECHNOLOGY

## MICROSOFT IS STRUGGLING TO SHIFT USERS TO WINDOWS 8.1

LATEST DESKTOP MARKET SHARE FIGURES SHOW SLOWER ADOPTION FOR WINDOWS 8.1 THAN OS X 10.9

Microsoft is struggling to convince users to take the free upgrade from Windows 8 to Windows 8.1, judging by the latest figures from Net Applications.

Windows 8.1, which was officially released on 17 October, accounted for 2.64% of the desktop market in November, while Windows 8 continued to command a (rather ominous) 6.66%.

By contrast, Apple's OS X 10.9, which was released a week later than Windows 8.1, has already overtaken OS X 10.8. The older version fell from a 3.31% market share in October to 1.85% in November, while the latest release now commands a 2.42% market share.

For whatever reason, it seems Apple is having much greater success in migrating users to the latest version of its desktop operating system than Microsoft is with Windows.

Both upgrades are free to users of the previous version of the operating system, and both are presented as optional, not mandatory, upgrades.

Businesses using Windows 8 may have put the brakes on a Windows 8.1 deployment until it has been validated by the IT department, but most figures suggest that corporate uptake of Windows 8 remains relatively low anyway.

The better news for Microsoft is that usage of Windows XP is, at last, beginning to fall off the cliff. It started 2013 with a market share of 39.51%, according to Net Applications' figures, but has now fallen to 31.22%.

Yet, with the support cut-off date looming in only four months' time, it seems highly likely that at least 20% of the world's desktops will still be running XP at the time security updates cease, unless Microsoft once again relents.



OS	SEP 2013	OCT 2013	NOV 2013
Windows 8	8.02%	7.53%	6.66%
Windows 8.1	0.87%	1.72%	2.64%
OS X 10.8	3.69%	3.31%	1.85%
OS X 10.9	0.06%	0.84%	2.42%

## REVERSIBLE USB CONNECTORS ON THE WAY

NEW CONNECTOR MARKS AN END TO PLUGGING CABLES IN THE WRONG WAY ROUND

A new, slimmer USB connector packing faster transfer speeds into thinner devices is on the way – but it won't be compatible with existing ports.

The new design, called Type-C, finally heralds reversible USB plugs, fixing the issue of jamming your charger cable in the wrong way round.

But the new standard won't be compatible with existing USB plugs, which will mean forking out for additional cables or adapters.

The USB 3 Promoter Group, which includes Intel, Microsoft and HP, has said the new connector is currently in development and should lead to "thinner and sleeker" devices.

"Intel is excited to see the development of the new thin Type-C connector as it will enable an entirely new super-thin class of devices from phones to tablets, to two-in-ones, to laptops, to desktops and a multitude of other more specific usage devices," said Alex Peleg, vice-president for Intel's Platform Engineering Group.

Type-C is an addition to the new USB 3.1 specification, which boasts transfer speeds of up to 10Gbits/sec.

The new connector will be around the same size as existing micro-USB ports, and the group said specifications should be ready by the middle of next year.





# GIGABYTE BOASTS 28 YEAR MOTHERBOARD RECORD!

COMPONENT MAKER GIGABYTE IS HAVING A GANG-BUSTER YEAR, SHIPPING MORE MOTHERBOARDS TO MARKET THAN IT HAS IN DECADES

While some might get a bizarre sense of superiority crowing about the impending demise of the PC and component industry, companies like GIGABYTE are putting the lie to the trend in fine style.

The component maker has just announced it shipped 17.5 million motherboards to market for the period

between January and October 2013, according to Digitimes. This means the company is on track for a whopping 21 million units overall by the year's end.

That's a 10.8 per cent year on year growth, and highest annual shipment in 28 years.

It seems the death of the PC really is largely exaggerated!

## HOT... OR NOT

### HOT

#### WD'S SSD/HDD

That's a lot of acronyms, but it doesn't stop us really loving WD's new hybrid (reviewed p.49), which we look at in depth in the Labs. Ostensibly designed for laptop upgrades, we think it's also perfect for tiny PC builds.



### NOT

#### OFFICE MOVES

We're moving offices, and with our large piles of kit, not to mention our own personal piles of stuff, it's been... not fun. Paperless office my shiny digital... bottom!



# THE GOLDEN AGE OF SSD VARIETY ENDS AS OCZ FILES FOR BANKRUPTCY

THE NUMBER OF SSD MANUFACTURERS CONTINUES TO DWINDLE AS TOSHIBA LOOKS TO PICK OVER THE BONES OF OCZ

Only a few years ago it looked like OCZ was going to evolve from a small developer of enthusiast SSDs to a significant player in the market. As countless companies started releasing SSDs driven by Sandforce controller chips, OCZ acquired controller manufacturer Indilinx in an attempt to differentiate itself.

However, over the course of recent months this has all amounted to naught, with rumours of failed takeovers and an ever-dwindling product line-up hinting that things weren't going well with the company. It now appears that the company has come to the end of the line, with an overnight announcement that it was filing for bankruptcy.

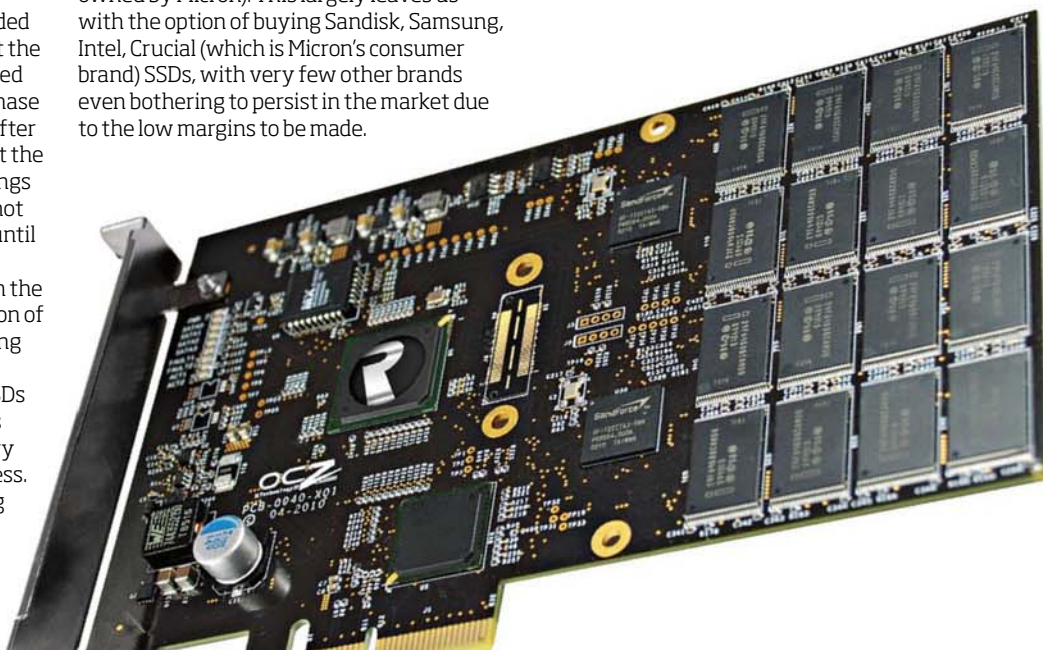
Just what this will mean for OCZ branded SSDs is still unclear. Despite the fact that the announcement says the company entered into an agreement with Toshiba to purchase the assets of the company, by doing so after bankruptcy Toshiba should be able to get the assets without taking on liability for things like Warranty. Suffice to say, we would not be rushing out to purchase an OCZ SSD until that situation becomes clearer.

This marks a pretty significant shift in the SSD industry, a sign that the consolidation of recent years is nearing completion. During Computex 2010 it was readily apparent that the number of companies selling SSDs was about to explode, as manufacturers desperately chased any product category that would expand their existing business.

It didn't take long, however, for the big players in the industry to start pushing

down prices and squeezing out the smaller players. This pressure has been so great that many manufacturers have either pulled out of the SSD market entirely, or ceased developing new product lines. We are now at the point where the only truly viable SSD manufacturers are those that actually make the flash memory as well - by controlling the entire production process they can still make money, despite the fact that price per gigabyte has dropped significantly in the past few years.

The number of companies actually making flash memory is small. There is Samsung, a Sandisk/Toshiba joint venture and an Intel/Micron joint venture (that is now largely owned by Micron). This largely leaves us with the option of buying Sandisk, Samsung, Intel, Crucial (which is Micron's consumer brand) SSDs, with very few other brands even bothering to persist in the market due to the low margins to be made.



# GAMING NEWS

ALL THE NEWS THAT'S FIT TO PRINT FROM THE GAMING WORLD

## FIRST CAST MEMBERS OF THE WARCRAFT MOVIE ANNOUNCED

DUNCAN JONES WARCRAFT FILM GETS A VIKING WARLORD, A FAMOUS INVENTOR AND PATRIOT, AND AN ASSASSIN FOR HIRE...

**S**lashfilm is reporting the first casting news for the upcoming Duncan Jones-directed Warcraft film, being produced by Legendary Pictures and a mess of big Blizzard names like Mike Morhaime and Chris Metzen.

The most interesting casting choice so far would have to be Travis Fimmel, an Australian actor best known for his piercing and unnerving gaze on The History Channel's Vikings (which really is worth watching).

He joins Ben Foster (3:10 to Yuma, The Mechanic), Dominic Cooper (First Avenger,

An Education), Paula Patton (2 Guns, Precious), Toby Kebbel (The Counselor, RocknRolla), and Rob Kazinsky (True Blood, Pacific Rim).

Duncan's also reworked the original script, and while the as-yet-unnamed film was meant to premier in 2015, that's now been pushed back to March 2016 - most likely not to clash with a certain Star Wars movie.

As to plot... nothing official, but many in-the-know Warcraft fans are sure that it has to be about petulant King Arthas. And Fimmel could be a great choice for that.

## BUNGIE'S DESTINY BETA COMING TO PS4 & PS3 FIRST

BUNGIE'S NEXT BIG GAME, OPEN WORLD SHOOTER DESTINY, IS GOING INTO BETA SOME TIME NEXT YEAR.

**K**udos to Bungie and Activision for one of the vaguest beta announcements we've seen.

Destiny, Bungie's big follow-up to Halo, is coming next year, but before it arrives, we'll also be getting a beta across all platforms - PlayStation 4, PS3, Xbox One, and 360. However, we only know that the beta will also be next year, and that PlayStation pre-orders will get some as-yet-unannounced lead time on the Destiny beta.

So there.

To qualify, you need to give an interest-free loan to Activision (ie, pre-order) from a participating retailer, and then take your supplied code (which will either be printed on your receipt, given to you on a flier, or possibly sent to you via mystic mind-waves) and follow the instructions on the beta page.

Those who have already decided to part with their hard-earned before October 1 will be automatically entered into the beta. If you have any questions about the beta,

don't ask Bungie, either, as Activision's announcement is pointing people at - you guessed it - your retailer.

However, in today's bout of mindless optimism, I am choosing to take the following sentence, "The Destiny Beta will include a diverse sampling of major activities in the full game, and will begin in 2014 on all four announced platforms: PlayStation 4, PlayStation 3, Xbox One and Xbox 360" as proof that there are unannounced platforms as yet, and therefore that we might get this on PC.



## GAME MASTERS EXHIBITION COMING TO SYDNEY'S POWERHOUSE MUSEUM

A SELECTION OF CLASSIC, PLAYABLE GAMES IS COMING TO THE POWERHOUSE MUSEUM THIS SUMMER, BACKED UP BY ART, DEVELOPERS, AND MORE!



The Game Masters exhibition at Melbourne's ACMI was a huge cultural hit last year, and now the entire show - maybe minus a few big name stars - is coming to Sydney's Powerhouse Museum over summer!

The exhibition aims to showcase the most influential games of all time, and features over 100 playable classics, from arcade games to PC to console.

The show is presented in three sections and is laid out like a living gaming universe. Visitors can learn about the games, their development, and see rare game artworks and objects, as well as watch interviews with classic designers.

"Playful at heart, Game Masters reveals a highly sophisticated, creative and successful industry. The exhibition will inspire curiosity and creativity across generations," said Powerhouse Museum Director, Rose Hiscock, in today's release.

Tickets are on sale now at Ticketek, and the exhibition runs to the 25th of May this year.





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"It's our new Editors' Choice for ultraportable gaming laptops."

- PC Mag

"The Blade offers unprecedented portability and style."

- IGN

"Sexy, Super thin and Portable. 9/10"

- Maximum PC

"A sexy and powerful gaming laptop with an amazingly slim profile. 4/5"

- Laptop Magazine

"It looks fantastic, exhibits top-notch performance in both day-to-day use and gaming. 4.5/5"

- Techradar

"The Ultimate 14" Laptop"

- Mashable

"Should you buy this? Yes."

- Gizmodo



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# MOST WANTED

THE NEWEST, HOTTEST PRODUCTS THAT WE WANT TO GET OUR HANDS ON!



## ▲ D-LINK LIMITED EDITION DUAL BAND AC1750 MODEM/ROUTER

For most people, a modem/router is not a centrepiece bit of kit. It's about function, more than form - no one shows off their router. It sits quietly somewhere in the house, just getting the job done.

However, if you do want to show off every bit of tech you own, perhaps you might like a router with a bit more... verve in the design stakes. And D-Link has you covered.

Sure, the name is damn long - D-Link Limited Edition Dual Band AC1750 modem/router, and that's shortening it! - but this networking device is also long in style. Coloured an aggressive Ferrari red, it looks fast, and it is fast. And there's only 3000 of the things, so if you want one, get in fast.

[www.dlink.com.au](http://www.dlink.com.au)

## ► VEHO PEBBLE SMARTSTICK+

A device like Logitech's case+energy is handy and all, but what if you have something other than a recent iPhone? Or don't want something that's going to bulk out your phone?

The PEBBLE Smartstick+ from Veho is just what you need. It's thin, light, and very, very handy. Designed to clip onto anything from your belt, to a pack, to... whatever, it delivers power via mini or micro USB, and Apple 30-pin connectors. It doses over an entire charge, too, making it great for getting out on the road with power to spare.

[www.veho-world.com](http://www.veho-world.com)

## ► LOGITECH CASE+ENERGY

With great power comes great responsibility.

Unfortunately, while that may be the case for young men bitten by radioactive spiders, it's not the case for most smartphones. With their great power, more often than not comes really poor battery life.

Enter Logitech's case+energy!

Designed for the iPhone 5 or 5s, the case+energy is a form-fitting case with a modular battery panel that can be removed if you don't need the extra power. And if you do need the power, you can get up to double the battery time. Very handy for travelling, or those who just can't help running their battery down playing Angry Birds.

[www.logitech.com](http://www.logitech.com)







## ◀ SAMSUNG GALAXY TAB 3 KIDS

Tablets and mobile devices have made impacts in a number of areas of our day to day lives, but one thing that keeps making my head spin is how young kids born with touch devices take to using tablets for gaming - or anything else. Of course, giving a stylish and expensive tablet to a child can have some... messy consequences.

Unless you've got one of Samsung's kiddie-safe GALAXY Tabs!

With two user modes, it's perfect for both adults and children. With a bright orange rubber casing it's super durable, too, and pretty hard to lose.

[www.samsung.com](http://www.samsung.com)

## ▶ KAISER BAAS GAME RECORDER HD

The new Kaiser Baas Game Recorder HD is perfect for those gamers who absolutely cannot resist boasting about their skills.

I mean - why talk about that awesome kill in Battlefield 4, when you managed to shoot a chopper pilot, before knifing the door-gunners once the heli settled to the ground (true story, bro), when you can show people!

The Game Recorder HD can record straight to your hard drive or a USB device, and if you plug in your headset/mic, you can even record your prideful but no doubt terrible swears as you do so!

[www.kaiserbaas.com](http://www.kaiserbaas.com)



## ◀ DIY NIXIE TUBE CHESS SET

This great little DIY kit combines two great, classically nerdy pastimes - chess, and building your own electronics. Hell, if you count the fact that it uses Nixie test tubes, that's *three* awesome things.

This kit lets you build your own retro-styled chessboard, soldering all the bits and pieces together yourself, to create a unique way to explore chess and learn about electronics.

In fact, if there are any steampunks in your life... this could be *the* perfect gift.

[www.thinkgeek.com](http://www.thinkgeek.com)

# What good is a warranty, if you don't have a manufacturer?

WHEN A COMPANY CLOSES, WHAT HAPPENS TO YOU IF YOU OWN THEIR HARDWARE? ROSALYN PAGE INVESTIGATES

**L**ate last year solid state drive manufacturer OCZ announced that it was filing for bankruptcy and the most likely buyer, at least for some of its assets, was Toshiba.

It's a bit of a sorry tale, because OCZ was one of the early innovators of SSDs for the consumer market but competitors such as Samsung were better able to ride the wave of innovation and falling costs. OCZ's been left high and dry and unable to pay its loans. If it can't strike a satisfactory buyout deal, it could be liquidated.

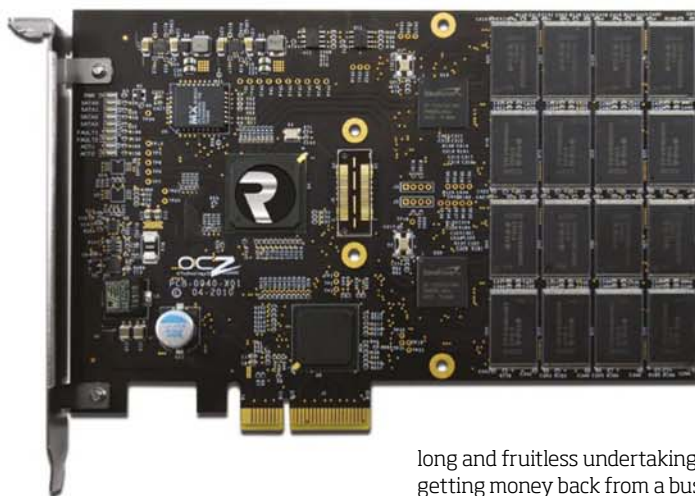
The company said at the time that Toshiba could acquire some or all of its assets, and OCZ for its part believes that everything is in place for it to go ahead as long as conditions such as business value and retention of employees can be agreed upon.

At the time of going to press with this column, it looks like it should be a done deal, particularly as OCZ has put out in public that the buyout arrangements are nearly complete. However, the announcement made no mention of warranty being included in the assets or the terms of the buyout.

In some terms of a buyout, the warranty may be covered by the new company because it intends to keep selling the products and provide customer support along with it. If, on the other hand, the company wants the intellectual property, it may sell off the remaining stock and not take on warranty in the terms of the buyout agreement.

The latter situation obviously leaves consumers in a vulnerable position. If a consumer buys a product such as an SSD at a firesale price, knowing that it doesn't have warranty coverage, they're taking a punt that it'll be okay and they won't run into any problems. It may or may not work out that way but they're aware of the risk and a significant discount is the sweetener.

If someone buys a product and then finds out the company is to be sold off without any mention of the warranty, it's a different matter. There could be many hundreds or thousands of



**“OCZ has put out in public that the buyout arrangements are nearly complete”**



**ROSALYN PAGE** has been a journalist for over 10 years specialising in the areas of consumer issues, technology and lifestyle. Rosalyn is the 2008 winner of the Best Consumer Technology Journalist at the IT Journalism awards. Her work is published in a range of newspapers and magazines

people caught out with a device that becomes faulty with no recourse to get it fixed or replaced. A smart company that wanted to create a bit of good will might replace them with their own brand and potentially create a bunch of new customers in the process. It relies on the company's intentions and marketing nous.

The conditions of the sale of a business usually determine what, if any, warranty provisions there may be in the future. In this case, it would be in the fine print of the agreement. Investigator approached Toshiba for a comment but the company wouldn't provide any.

If a business goes bust, the Australian Competition and Consumer Commission (ACCC) told Investigator that consumers should seek out the administrator about their warranty rights.

In Australia, consumers would be in the position of unsecured creditors in this case. This would entitle them to register a claim for any money that they are owed.

It would be an interesting exercise to try this approach, but it could be a

long and fruitless undertaking because getting money back from a business that's insolvent isn't a good prospect.

In addition to extended warranties or manufacturer's warranties, the ACCC said consumers have rights under the consumer guarantee provisions of the Australian Consumer Law.

“The consumer guarantees will apply irrespective of any warranties provided by businesses and it is likely in many cases that these guarantee rights could last beyond any manufacturer's warranty that is provided with the product.”

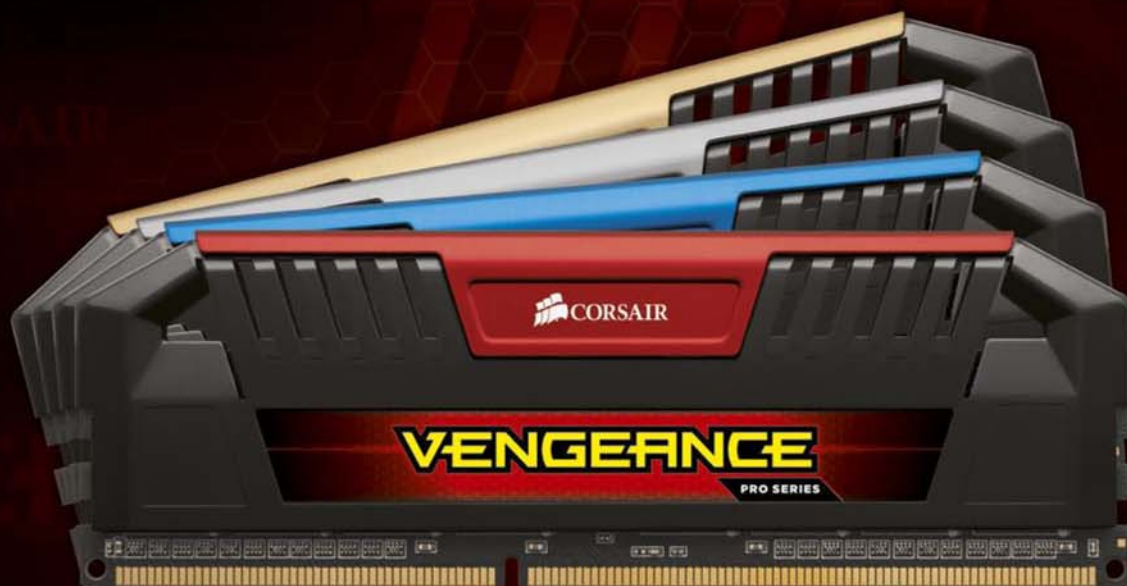
“Many of the consumer guarantees (such as the guarantee that goods will be of acceptable quality) can be exercised against the retailer or the manufacturer, so that if one goes out of business, a consumer may be able to claim against the other.”

If you find that the manufacturer can't help, or ceases to exist in the case of a business being sold, then your next best option is to go through the retailer for a repair, refund or replacement.

**HAD AN ISSUE  
AS A CONSUMER?  
INVESTIGATOR  
CAN HELP.**

Email: [investigator@pcandtechauthority.com.au](mailto:investigator@pcandtechauthority.com.au)





# VENGEANCE

**PRO SERIES**

**Outstanding overclocking potential.  
Class-leading value.**

Corsair Vengeance Pro Series memory modules are designed for overclocking on the latest 3rd and 4th generation Intel® Core™ platforms, with eight-layer PCBs and ICs specially selected for performance potential. As a bonus, they're priced to leave you with more room in your system build budget. And, since they're available in multiple colors, they're a great choice for your next showcase system.

The aluminum heat spreaders provide superior temperature management and have the aggressive look you want in your gaming rig. Want even more overhead? The custom-designed Vengeance Airflow provides low noise, high speed heat dissipation so you can extract even more performance.

**Designed for Enthusiasts. Engineered for Performance.**  
Learn lots more at [corsair.com](http://corsair.com)



Ready for 4th Generation  
**Intel® Core™ Processor**



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MEMORY



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MICE



HEADSETS

# SUPREMEFX

## THE SUPREME PC GAMING AUDIO BEYOND YOUR IMAGINATION

The PC audio was brought onboard onto a desktop motherboard from as early as late 1997s, after Intel® Architecture Labs defined the AC'97 specification. However, over the past years, despite the vast improvement in audio CODECs, the onboard audio solutions are often ignored by gaming enthusiasts, which defeats the whole purpose of brining the PC audio onboard in the first place. ASUS, the absolute leader, and the pioneer of the motherboard industry understands the need for high quality audio in modern gaming since 2006, over many years of research in the field

of PC audio, have finally came up with the latest generation SupremeFX audio solution, aimed to use engineering skills to reveal the true power of modern audio CODECs to its users. The Unique design of the latest generation SupremeFX audio solution focuses on the following aspects:

### NOISE PREVENTION

#### SupremeFX Shielding Technology

##### • PCB Moat

There is no copper pad running between the audio and the rest of the motherboard to split their reference grounds, essentially makes the audio section into a virtual stand alone expansion card. This is in

placed to ensure the audio is not going to be effected during the activity of digital transmission such as mouse cursor move, file transfers or anything else as such.

##### • PCB Shielding

The PCB stacking has been rearranged to utilize the cooper pads as the metal shields. This is implemented to prevent the possibility of capturing coupling noise when current runs next to the PCB tracks carrying audio signals.

##### • Stainless Steel EMI Cover

The core controller, i.e. the CODEC is covered by a stainless steel cover. This is implemented to prevent the electrostatic noise from high frequency devices such

### SUPREMEFX 2013

DESIGN	CONVENTIONAL DESIGN	SUPREMEFX HERO	SUPREMEFX GENE	SUPREMEFX IMPACT	SUPREMEFX FORMULA	SUPREMEFX BLACK
Audio Codec	ALC892 (SNR: 95dB)	ALC1150				
	Sound Core3D (SNR: 102dB)					
	ALC898 (SNR: 110dB)					
	ALC1150 (SNR: 115dB)					
Separating Digital and Analog Grounds	N/A	Red Line lighting PCB Moat		Separate PCB	PCB Moat	Red Line lighting PCB Moat
PCB Shielding		SupremeFX Shielding				
EMI Protection		Stainless Steel EMI Cover				
Warm and natural output		ELNA® Professional Hi-Fi capacitors				
Prevents Sound Distortion from PCB Tracks (Rear)	Single-End Output			Differential output utilizing Hi-Fidelity Ti Audio amplifier		
Faster Response and Audio Range Expansion	N/A				WIMA® Film Capacitors	
Prevents Sound Distortion from PCB Tracks (Front)	Single-End Output			Differential output utilizing multiple Hi-Fidelity Ti Audio amplifiers		
Front Audio DAC	Codec Integrated				Dedicated Cirrus Logic CS4398 DAC (SNR: 120dB)	
Boost Headphone Driving	N/A			Hi-Fidelity Ti audio amplifier (600ohm)	Hi-Fidelity Ti Headphone Amplifier (600ohm)	
De-Pop Noise	N/A					NEC/TOKIN UC2 Audio Relay
Amplify audio while system off	N/A			Music PnP	N/A	
Multi-Channel S/PDIF Output	N/A	DTS Connect				
Pause noise cancellation	N/A	Perfect Voice - Noise Gate				
Environmental noise cancellation	N/A	Perfect Voice - Noise Reduction				
In Game Sound Visualization Overlay	N/A	Sonic Radar				





as GPUs will not affect the function of the CODEC in any ways.

### Differential Output via multiple audio amplifiers

Rather than transmit audio signal as it is on the PCB, multiple sets of Hi-Fidelity audio amplifiers has been utilized to form differential output as opposed to the traditional singled ended design. This makes the audio track completely tolerant to surrounding coupling noise and electrostatic interference, delivering a few decibels better in its signal noise ratio (SNR), which yields the essence in audio purity and clarity.

### WARM AND LIVELY SOUND WITH DETAILS

#### ELNA® Professional Hi-Fi Capacitors

The Japanese made ELNA® Professional Hi-Fi Capacitors are favoured over solid or POS caps thanks to its nature of having a smoother charge and discharge rate, preventing the tiny details to be lost, yielding human alike warmer and lively output.

#### WIMA® Film Capacitors

The German made WIMA® Film Capacitors features superb frequency response, which helps to improve both the high and low frequency ductility. The WIMA® Film Capacitors used in the solution to reduce ripple noise (THD+N), and a wider range hearing experience.

### REMARKABLE HEADPHONE GAMING EXPERIENCE

#### Hi-Fidelity Ti Headphone Amplifier (600Ω)

The front audio jack is boosted up by a set of 600 Ω Hi-Fidelity Ti Headphone Amplifier to drive even the toughest 600 Ω headsets, as

well as producing tempted in audio effects for the essence of in-game realism.

#### Cirrus Logic CS4398 Front Audio DAC

A second set of audio solution, the Cirrus Logic CS4398 Front Audio DAC (120dB SNR, -107dB THD+N, Max. 192kHz/24bit) replaces the Realtek® ALC1150 to deliver professional discrete soundcard alike unforgettable 120dB SNR audio experience right from the front audio jack.

#### NEC/TOKIN UC2 Audio Relay

NEC/TOKIN UC2 Audio Relay is in placed to smooth out the charge and discharge rate during system on/off event, eliminating the possibility for on/off pop noise if any.

### FINAL TOUCH GIVING GAMERS THE LEAD LIKE NO OTHERS

#### See the Targets in Sight with Sonic Radar

The industry exclusive Sonic Radar translates the in-game audio source into a radar graph, as well as boosting the effect of several types of audio source in particular to keep the gamers alerted of the potential hazard. Integrated up to 4 sets of FPS game presets, the Sonic Radar offers its gamers with the exclusive edge against enemies.

#### Perfect Voice bring in-game communication to perfection

Perfect voice is the latest in-game noise filtering technology that filters out the

environmental noise within conversations (Noise Gate) or when quiet down (Noise Reduction) using any types of microphone. The irreverence of an array mic enables gamers to use their favourite gaming headsets with ultimate clarity during conversations.

#### Cinema Grade Real-Time Encoders

Integrating the award winning DTS encoders enables multi-channel digital outputs via the S/PDIF interface (DTS Connect).

Hear it to believe it, be prepared to be blown away by the incredible beyond imagination.

### TURNING SYSTEM INTO A MINI HOME AMPLIFIER

#### Music PnP (SupremeFX Impact Exclusive)

The SupremeFX Impact audio module is uniquely designed to turn the system into a mini eco-friendly home amplifier when under S5 Soft-Off state. Simply connect any audio device to the pink front MIC-In port, the audio feed will then be amped up by the series of Ti audio amplifiers for users to enjoy the great sound quality from the rear green speaker out jack.



CRYSTAL CLEAR  
AUDIO WITH  
TEMPERING  
EFFECT



SONIC RADAR  
KEEPS TARGETS  
IN SIGHT

ROG MOTHERBOARD

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# A-LIST

# APPS

61 OF THE BEST APPS FOR YOUR SMARTPHONE AND TABLET

## OPERATING SYSTEMS KEY



Apple



Android



BlackBerry



Windows Phone



Windows 8

**CONTRIBUTORS:** DAVID BAYON, BARRY COLLINS, TIM DANTON, SHONA GHOSH, DARIEN GRAHAM-SMITH, MONICA HORRIDGE, NICOLE KOBIE, DAVID HOLLINGWORTH, AND BOBBY MACPHERSON

**T**here are hundreds of thousands of apps to sift through on the stores run by Apple, Google and Microsoft, and picking the right ones is no simple task – who wants to spend all day downloading, installing and testing apps? When you’re looking for a photo-editing app or mobile security software, you don’t want the newest or most popular release: you want the best. Our A-List apps represent the very highest quality and value, in 15 categories and across the five major platforms.

With so much variety on offer, there’s a

niche app for every need, so our top pick in the various categories may not be quite what you had in mind. Our Recommended alternatives are also stand-out packages that are worthy of a download. Whether you’re looking for a productivity suite, a mobile browser or a different tool altogether, you’ll find something here to suit your needs.

Our app choices cover free and paid-for options for tablets and smartphones. If your device is already loaded up, let us know your favourite apps at [www.facebook.com/pcauthority](http://www.facebook.com/pcauthority).

## PHOTO EDITORS

### Repix

PRICE Free

PLATFORM  

★★★★★

Repix is a terrific app for those who like to have post-production fun with photos. Its chief selling point is a wide selection of brushes that overlay special effects on to your snaps.

Many of the best brushes are held back for the \$5.99 Master's Collection, but there are plenty to enjoy for free. Our favourite freebie is Dotter, which turns portraits into Lichtenstein-style pieces of pop art. There are also brushes for adding glow smoke, solar flares, water drips and a flock of swooping ravens.

It's easy to ruin good photos with a barrage of effects, but used with subtlety the brushes give photos a glossy-magazine touch of elegance. They work particularly well on portraits.

There's also a decent selection of photo filters that are a cut above



the normal Instagram fare. Repix includes the standard controls over brightness, contrast, and saturation, as well as cropping tools and frames. Any changes made to photos are easy to undo, and options for sharing your retouched images are

plentiful, including direct uploads to Flickr, Twitter, Facebook and Tumblr. Repix won't please the photography purists, but anyone who fancies themselves as a digital artist will find a good range of tools with which to experiment here.

## ALTERNATIVE CAMERA APPS

The camera apps shipped with phones and tablets are fairly rudimentary, offering little control over output. If you're serious about mobile photography, consider a dedicated app.

Camera+ (\$1.99 for iPhone; \$4.99 for iPad) is the pick of the bunch for iOS, offering a range of advanced tools to improve snaps, including independent focus and exposure points, a horizon leveller and the option to lock white balance. The stabiliser ensures that photos aren't taken until your hand is steady, avoiding the motion blur that afflicts many smartphone snaps. It offers a high-quality selection of filters to apply after the snap's been taken, too.

ProCapture (\$4.39 for Android; free trial version) provides a selection of manual controls for Android tablet and phone users. The app offers exposure compensation and white-balance controls, as well as an in-viewfinder histogram that allows photographers to check their levels. Wonky or dull compositions can be avoided by switching on the viewfinder grid or Fibonacci spiral, which helps you to line up horizons

or place subjects in areas of maximum interest. Tools to help you take wide shots and panoramas are also thrown in, although the latter is a little too finicky for our liking.



### Over

PRICE Free

PLATFORM 

★★★★★

Text overlaid on photos by generic photo-editing apps tends to be crude and inelegant. Over, as the name suggests, is designed specifically for this task, and includes a selection of attractive fonts to make any typography across your images look stunning.

It's great for designing poster-style motifs, and the app gives full range of control over the size, colour and positioning of text. A limited selection of photo-editing tools allows you to tint the photo to make the text have greater impact.

There's even an option to create printable postcards and have them sent anywhere in the world - for a fee, of course.

### PhotoFunia

PRICE Free

PLATFORM    

★★★★★

Have you ever wanted to be on a billboard? Or have your portrait hung in a gallery? PhotoFunia offers a vast selection of special effects and filters to apply to your photos. By and large, the effects are applied with subtlety and aplomb, making it look as if your photo is on the frame on the windowsill or sitting on the side in the developing studio. (In fairness, some of the effects are plain naff, too. Drop your head onto Marilyn Monroe's body? We'll pass, thanks.)

Aside from photo manipulation, the app also includes a selection of text effects, so you can scrawl your name into wet sand, have your company name appear on a pin badge or have a chilling message daubed in cold blood on a wall.

PhotoFunia is free and it works with almost every mobile platform around. Since it's a cloud-based service, it requires an active data connection, however.



## TRANSPORT

### Tripview

**PRICE** Free

**PLATFORM**  

★★★★★☆☆

Sadly, there's no single national app for transport, so we're going to go with what we know - and where we live - and pick the excellent Tripview app for getting around Sydney. It combines everything you could want for getting from A to B (via any alphabetic stop on the way) by bus, ferry and train. Even better for bus lovers, you can track buses in real time.



### Google Maps

**PRICE** Free

**PLATFORM**  

★★★★★☆☆

Google Maps remains the best choice for planning quick journeys, with routes incorporating car, bus, the Tube, train, tram, bike and foot. Google is stunningly accurate when it comes to finding destinations, too. With the best satellite views and turn-by-turn navigation thrown in for free, it isn't hard to see why it's the first app most of us install on new smartphones.



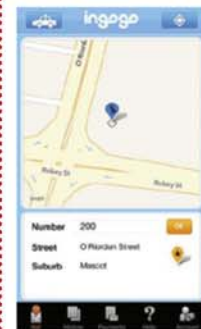
### ingogo

**PRICE** Free

**PLATFORM**  

★★★★★☆☆

Focusing on Sydney and Melbourne - for now - ingogo is one of the most convenient ways to book and track a taxi. The real draw of the app is that it's something that works at the driver end, so you can track their approach and even communicate directly with them in case of any delays. It's very handy!



## EXERCISE

### Strava

**PRICE** Free

**PLATFORM**  

★★★★★☆☆

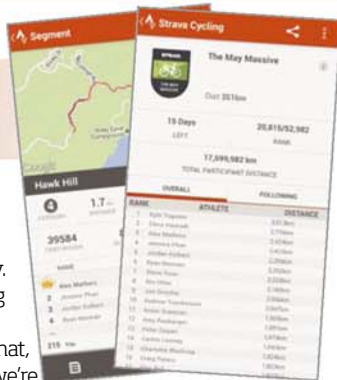
Strava is the king of cycling apps. It can take any ride and turn it into a competition - brilliantly. It's so effective at making league tables out of the most innocuous routes that, according to the media, we're now a nation overrun by antisocial racers, risking lives to trim records, apparently.

For most sane people, however, Strava is simply a great incentive to get back on the bike every day. Rides are tracked and stored, complete with detailed breakdowns; you can check full maps and statistics on [www.strava.com](http://www.strava.com).

The real fun comes in the challenging element - whether in beating your own personal bests or those

of others in your area. You don't even have to match someone's entire ride to join in; just complete one of the thousands of short segments programmed in Strava's database. Some of the more popular routes attract riders from far and wide for a crack at topping the leaderboard - not all in the countryside, which is what gives Strava its slightly controversial reputation.

Strava is also available in a running version.



### Zombies Run!

**PRICE** From \$4.29

**PLATFORM**  

★★★★★☆☆

"Zombies detected!" It really shouldn't work, but somehow you'll come to crave and dread those two words as they trigger yet another 30-second sprint for survival. The fact that you'll obey probably says more about the addictive challenge of run-tracking apps than it does about the voice acting in Zombies, Run!, but there's no denying its popularity: half-a-million runners enjoy their One Direction interspersed with the wanton slaughter of zombies.



### Adidas miCoach

**PRICE** Free

**PLATFORM**   

★★★★★☆☆

The wide-ranging miCoach from adidas is one of the few quality iOS and Android fitness apps to make it onto Windows Phone. Its genius lies in its range: you can use it as a GPS tracker like any other mobile fitness app, but the optional accessories - from a heart-rate monitor to the X\_Cell motion tracker - turn miCoach into a tracker for pretty much any sport or activity. It's aimed more at the serious athlete than the sporadic jogger, but it's free if you want to try it.



## TV AND VIDEO

### TV & Movie Guide Australia

**PRICE** Free  
**PLATFORM**   
★★★★★

This was always going to be a tough section to fill.

Thanks to the lack of access to the many great streaming services enjoyed in other regions around the world, we're a little restricted when it comes to great streaming apps. In fact, we're very restricted! Many of the big national networks have their own apps and channels, but there's no one service that leaps out.

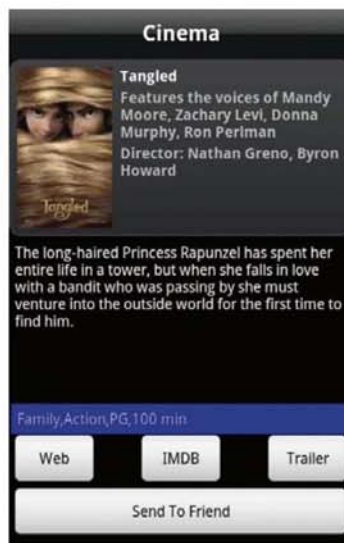
So we're going with something that at least helps you across all channels – a good TV guide!

Even then, it's tough finding one that works on a number of devices. However, we've picked eBroadcast's excellent TV & Movie Guide Australia for a couple of reasons.

Sure, it's restricted to Android (use OzTV if you're an Apple fan), but not only do you get an excellent TV guide, with the ability to share television picks with friends, choose what channels you want to track from every station in Australia, but you can also keep across cinema times, too!

You can find session times for all cinemas in the country, keep up to date with new releases and movie previews, and get access to IMDb and official movie websites.

Not bad for a free app!



### REMOTE CONTROL APPS

The app stores are full of proprietary TV remote control systems that can switch channels on TV equipment using the IR transmitter built into many mobile devices.

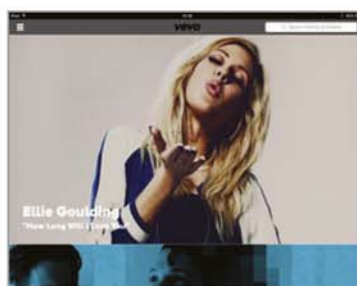
A lot of them work for particular technology ecosystems, so if you have a Samsung telly and a Galaxy S4, you can use Samsung WatchOn to both browse what's on and control your television. There are similar apps for LG, Panasonic and more – though of course these only work on Android devices.

You can also take direct control of YouTube via the aptly named YouTube Remote, on Android. This lets you control and browse videos on either your PC or your net-connected smart TV. All you need to do is pair the app on your device to your PC or TV, and you're ready for a seamless YouTube bingeing experience without having to mess around with hard-to-navigate on-screen keyboards on your television!



### Vevo

**PRICE** Free  
**PLATFORM**   
★★★★★



A sort of MTV-on-demand, Vevo is a vibrant and varied showcase of music videos, live performances and concerts. You can browse through the smartly designed homescreen and click on a video to get going; Vevo will create a playlist of related material for you to leave running. Alternatively, you can call up the search engine and hunt down individual artists or tracks and start building your own playlists. Videos are occasionally interspersed with ads, but they're not too intrusive.

If you're of a certain vintage, don't be put off if you don't recognise any of the artists on the homescreen; Vevo is a treasure trove of live shows from British acts from the 70s, 80s and 90s.

### TED TV

**PRICE** Free  
**PLATFORM**   
★★★★★

An antidote to Made in Chelsea, The Only Way is Essex and all the other breathtakingly dumb shows clogging up the airwaves, TED offers a huge library of fascinating lectures on a remarkable breadth of topics. You will, for example, find F-Secure's security expert Mikko Hypponen giving his two-pence on the NSA's surveillance of the internet, alongside Annie Lennox giving an impassioned talk about why she's an activist for HIV/AIDS.

The Inspire Me button is a key part of the app. Punch in the type of lecture you fancy – for example, "inspiring", "ingenious" or "funny" – and how long you have to watch, and the app will automatically create a playlist to fill the time. Talks can also be downloaded to your tablet or smartphone for offline viewing, so you can store them up for long journeys. With new videos added on a regular basis, it's one of those apps that's worth returning to.



## EBOOK READERS

### Kindle

**PRICE** Free  
**PLATFORM**      
 ★ ★ ★ ★ ★ ☆

We could pretend we're trendy and devour our fiction on an obscure app you've never heard of, but let's not kid ourselves: most of us already own Kindle devices, so our ebook purchases are in Amazon's cloud locker.

There are lesser, but still important, reasons for using the Kindle app. It works everywhere – phone, tablet, PC and Mac, even in your browser – and your progress is synced automatically between all of them, which makes it incredibly convenient for reading on the move. You can highlight, bookmark, look up and share passages, too. Amazon's X-Ray, when it's supported, is a great tool for tracking characters and adding context, and text-to-speech lets you



listen rather than read. You may prefer Google Play Books or Apple's iBooks, but Amazon has the popular vote. We wish the company would open up and support different ebook formats, but we have to admit its lock-in is keeping us in the fold.

### Comics

**PRICE** Free  
**PLATFORM**      
 ★ ★ ★ ★ ★ ☆

With more than 40,000 titles from Marvel, DC and many more, comiXology's hugely successful Comics app lets you read the latest Walking Dead on your phone or tablet. You may think reading a comic on a phone would be a nightmare, but Guided View zooms you smoothly from pane to pane, rather than leaving you to squint at the full page.



Automatic syncing across your devices means you won't lose your place, either. All in all, it's a comic-lover's best friend.

### Wattpad

**PRICE** Free  
**PLATFORM**      
 ★ ★ ★ ★ ★ ☆

Unlike other stores full of best-sellers, Wattpad is a community built around aspiring authors, many of whom self-publish on the site. The quality varies, but the app has a big cheerleader in the form of Margaret Atwood, who posts notes and excerpts from her novels and encourages new writers.



## MUSIC

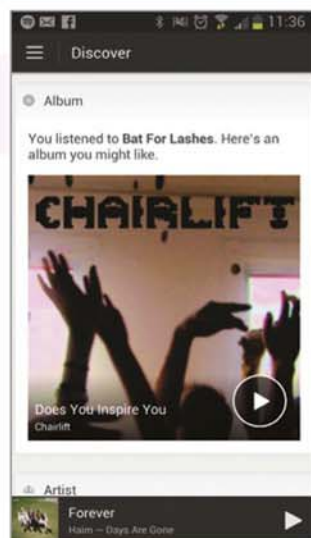
### Spotify

**PRICE** Free  
**PLATFORM**      
 ★ ★ ★ ★ ★ ☆

Spotify remains the go-to music-listening app, largely because no convincing rival has come along to knock it out of the park. There are features now standard to most streaming services, such as offline listening and radio, but a couple of extra features put it a cut above.

There's a newly added Discover section for music recommendations, which is designed well for touchscreens and idle browsing. You can also follow friends signed up to Spotify, provided you're willing to connect it to your Facebook account. Streaming goes up to a high-quality 320Kbits/sec for paying subscribers.

There are drawbacks, however. Licensing restraints

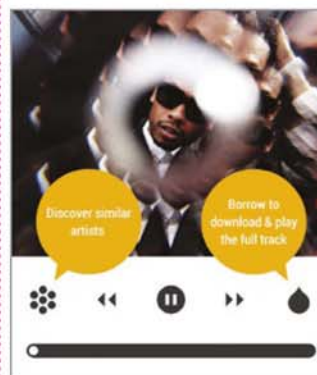


mean Spotify's catalogue isn't as complete as we'd like, while storing playlists offline gobbles up smartphone memory. It's easy to clear out songs, but using the app regularly means it will require a spring clean every now and then.

### Bloom.fm

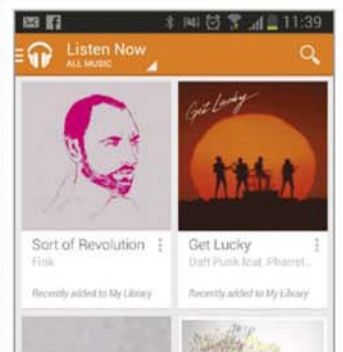
**PRICE** Free  
**PLATFORM**     
 ★ ★ ★ ★ ★ ☆

Bloom.fm is a beautifully designed radio app that lets you play as many songs as you like for free and borrow a set number for a fee as little as £1 per month. The recommendation and artist-discovery tools are clever and attractive, making Bloom.fm an excellent budget contender.



### Google Play Music

**PRICE** Free  
**PLATFORM**      
 ★ ★ ★ ★ ★ ☆



Play Music falls short of Spotify on features, but it's an excellent free option, especially for those fully wrapped up in the Google ecosystem. You can store 20,000 of your own songs in its cloud for free or pay £10 per month to stream from its library. The Listen Now function suggests tracks based on your listening history.

## COOKING

### BigOven

**PRICE** Free  
**PLATFORM**     
★★★★★☆☆

BigOven is the ultimate app for hyper-organised foodies, bringing together a recipe database, a day-by-day meal planner and a digital shopping list.

There are more than 250,000 recipes to search through, putting to shame the limited selection on expensive celebrity-chef-branded apps. The recipes are of variable quality, since they're user-generated, but a rating system sifts out the best ones.

The real strength of the app is its ability to organise every step of the cooking process. After you find a recipe you like the look of, you can assign it to a particular meal - such as Thursday's dinner - then tap to add any missing ingredients



to a shopping list. Recipes can be scaled up or down easily, and the "grocery list" is automatically organised by aisle to save you running back and forth in the supermarket.

You can also add your own recipes; in the free version, you're limited to 25.

### Paprika Recipe Manager

**PRICE** \$5.49  
**PLATFORM**     
★★★★☆☆

It's easy to lose track of recipes you've found across different websites, so the Paprika Recipe Manager is a great concept: open any food site from the in-app browser and click Save Recipe to import it into your digital cookbook. It's attractively designed and intuitive, although it has trouble with recipes on lesser-known websites. Once added, recipes can be easily assigned to a meal planner or added to a shopping list. There's no way to search recipes added by other users, so you'll need to put in some work initially to make it useful.

### Evernote Food

**PRICE** Free  
**PLATFORM**    
★★★★☆☆

Evernote devotees have long used the note-taking app to store recipes and lists of restaurants, which led to this food-orientated offshoot. "Memorable food moments" can be saved, along with geolocation data, notes and photos. Even if you don't feel the need to remember what you had for dinner last week, it's useful for keeping track of your favourite dishes. The app also lets you search for nearby restaurants and add them to a to-do list.



## NOTE-TAKING

### Evernote

**PRICE** Free  
**PLATFORM**     
★★★★★☆☆

Evernote has become the app to beat in the note-taking category, overtaking Microsoft's OneNote, although both are excellent tools for keeping your thoughts organised. Evernote lets you clip websites, make text notes and attach photos or audio to files. It's easy to search, and it syncs across all of your devices, so it's always to hand. Once you've used it to organise ideas for a project, plan a holiday or simply keep your thoughts in order, you'll wonder how you ever lived without it.

Note-taking doesn't really capture the full capability of Evernote, however. For example, it can be used to



archive your photos and search them by the text in the images - a handy tool if you use your smartphone to take snaps of presentation slides or other documents for future reference.

Evernote has added a host of specialised tools to its stable - such as its Evernote Food app, above - that extend its utility even further. Penultimate is a free iPad-only handwriting tool for taking notes or making sketches, while Skitch lets you make notes on top of images or Google Maps - ideal for sending directions.

### OneNote

**PRICE** Free  
**PLATFORM**     
★★★★★☆☆

It's easy to lose track of recipes you've found across different websites, so the Paprika Recipe Manager is a great concept: open any food site from the in-app browser and click Save Recipe to import it into your digital cookbook. It's attractively designed and intuitive, although it has trouble with recipes on lesser-known websites. Once added, recipes can be easily assigned to a meal planner or added to a shopping list. There's no way to search recipes added by other users, so you'll need to put in some work initially to make it useful.

### Outline

**PRICE** Free  
**PLATFORM**    
★★★★★☆☆

Outline+ is similar to OneNote - and compatible with it, making it a good replacement if you're not keen on Microsoft's note-taker for the iPad but want to keep using it at your desk. It's similar to its rivals in that it allows you to take notes, annotate images and highlight text, but it has a slicker design and syncs with major cloud storage systems, including SkyDrive, Dropbox and Box. Outline+ also works with SharePoint, a handy feature for business users who prefer to take notes on their iPad. Unlike OneNote and Evernote, however, it isn't free, and it's only available on Apple's tablet at present.



## PRODUCTIVITY

### Microsoft Office 365

**PRICE** Free (with a sub to Office 365)

**PLATFORM** 

★ ★ ★ ★ ★ ☆

There are many reasons not to pick Office 365 as our A-List productivity choice. The Android and iPhone "Office Mobile for Office 365" apps are designed only for phones and have limited capabilities. There are no versions optimised for iPads or Android tablets, with Microsoft's official advice directing people to Office Web Apps. Plus, it's expensive. So, why have we picked it?

It boils down to one thing: if you need to do heavyweight work, there's no escaping Office. And if you want a guarantee of compatibility - so the changes you make to a document on the move won't mess around with your formatting - it's the only choice. We're impressed by how

seamlessly it works, too. You can create a presentation on your main machine and make quick edits on your mobile device, for example.

For the growing number of Windows Phone users, mobile versions of Excel, PowerPoint and Word are all included by default, and integration with SkyDrive is seamless: all your changes are made to the cloud-hosted version of the document, which is then synced with any other devices linked to your SkyDrive account. While edits on a phone are inevitably limited compared to those made on a PC, it's impressive how much you can get done on a tiny device.

The fact these apps are also included if you subscribe to Office 365 Small Business Premium or Home Premium - which includes Word, Outlook, PowerPoint, OneNote, Excel, Publisher and Access - make it the strongest contender here.



### Apple iWork

**PRICE** Free on new iDevices

**PLATFORM** 

★ ★ ★ ★ ★ ☆

Apple surprised us by bundling iWork with new iDevices, but even if you upgraded an older iPad, iPhone or iPod touch to iOS 7, many of the apps that it includes - including Numbers for spreadsheets, Pages for documents and Keynote for presentations - are worth the outlay.

Numbers, Pages and Keynote all include templates to help the creation process, and Apple has introduced some nice touches - such as function shortcuts accessed via Numbers' onscreen keyboard - to make what power is available easy to access. Refreshingly, the templates are customised for the UK rather than pushed over from the US, so that's handy for Australian users.

However, existing users of Pages and Numbers should be wary of upgrading, with many users complaining that they can't open documents created in the old version.

### OfficeSuite Pro

**PRICE** Free on new iDevices

**PLATFORM** 

★ ★ ★ ★ ★ ☆

Ever since Google took over and - frankly - ruined Quickoffice, Android users are better served by OfficeSuite Pro.

As with any third-party office suite, don't expect formatting to be immaculately preserved if you're importing fancy documents or presentations saved in Microsoft Office formats. Although in our tests, it did an excellent job of preserving a complicated Excel spreadsheet.

It also boasts an above-average selection of editing and formatting tools, and creates smart-looking graphs from spreadsheets.

It's compatible with a range of cloud computing services, so you can easily save your work to Dropbox and SkyDrive - the latter of which is, of course, now fully integrated into Microsoft Office itself, making it easy to pick up on the desktop where you left off on your Android device.

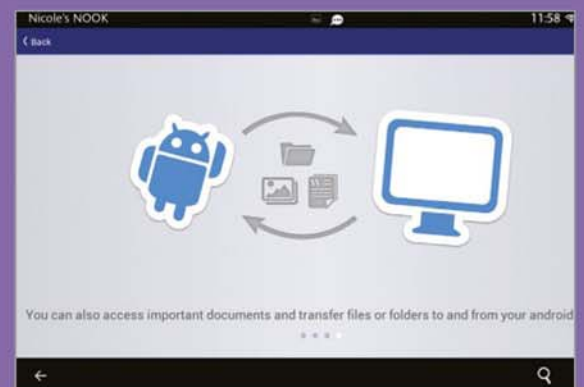
There's a seven-day free trial available to give it a test run before stumping up a tenner.

## REMOTE DESKTOP APPS

When you're on the move, it's a pain not having all your files to hand - and it's always the one you need most that hasn't been synced to your cloud storage. All is not lost if you've installed a remote desktop app, which will allow you to access your files and control your PC when away from your desk. Windows 8 Pro has such a tool built in, but for those with rival tablets, there are other options.

TeamViewer is a well-known desktop-to-desktop client, and also has free mobile apps for Android and iOS tablets. The standard app lets you navigate the host PC via your touchscreen, and removes the background wallpaper to cut down on graphics processing.

LogMeIn also carries over its remote desktop system from PCs to mobile, offering a free basic app for iPad users. Android users have to pay for access, however.



## SOCIAL

### Tweetbot 3

PRICE \$2.99  
PLATFORM 

The recently updated Tweetbot is still the best Twitter client we've come across, although its developers have started to cash in on that status. The recent version 3 update was little more than an iOS 7 reskin, and even removes a couple of handy features - such as triple-tapping on tweets to reply - yet they cheekily decided to charge afresh.

That said, it's still smartly presented and feature-laden, with options to mute users for a particular period of time, a wysiwyg-style tweet composer, and a hugely useful auto-suggest for sending messages to the people you follow. Better still, tweet timelines are synchronised, so you can pick up where you left off when switching from



iPhone to iPad - although, again, you have to pay for both. It's a must-have, but there's nothing to convince us to upgrade from the old version.

There are separate versions for the iPhone and iPad, plus a dedicated Mac edition, so you can use it across your Apple devices.

### Redditting

PRICE Free  
PLATFORM 

Navigating the morass of news, memes and endless discussion threads that comprise Reddit is no mean feat, but Redditting does a brilliant job of boiling it down. It effectively turns Reddit into an RSS reader, allowing you to browse your favourite subreddits, filter out sources or contributors, and read the source article beside the comments in split-screen. The setting that allows you to filter adult content could make Reddit palatable at your place of work.



### Flipboard

PRICE Free  
PLATFORM   

Flipboard received a significant makeover last year, allowing anyone to become their own "magazine editor", curating content from websites and other social networks and sharing it with the public at large in a smartly presented, flickable virtual magazine. It remains one of the few apps to neatly collate posts from different social networks, including Facebook and Twitter, providing a one-stop shop for those looking to catch up on their friends' activity, be it posts to news articles, status updates or recent photos. Unlike many rival apps, it also now supports tablets and laptops running Windows 8.1.

## BROWSER

### Opera

PRICE Free  
PLATFORM  

Opera's mobile browser comes in two flavours: Android users get the full Opera Mobile, while iOS and BlackBerry owners get the slightly less feature-packed Opera Mini. Whichever you choose, you get a clean and friendly interface, with a one-touch sharing feature for sending URLs to friends, and a convenient Save Page tool that grabs copies of pages for you to read offline. The Android edition also features a convenient integrated download manager, which lets you pause, resume and rename downloads within the browser.

What really sets Opera apart is its "off-road" mode, available on both platforms. This lets you route your browsing through a proxy server that



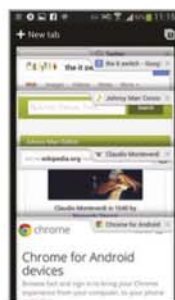
automatically compresses every web page you visit. The result is that pages load faster, and your mobile data usage can be slashed by as much as 90%. Plenty of browsers promise to save you time, but switching to Opera could actually save you real money.

### Chrome

PRICE Free  
PLATFORM  

Once you've signed in to Google's ecosystem, Chrome seamlessly picks up your bookmarks, passwords and history from your desktop browser, giving you a similar experience across any device you log in to. It supports unlimited tabs on even the smallest screens, and its "incognito mode" lets you browse without leaving a trace. You can also send

pages from your PC to your phone or tablet with a single click, which is handy for sending yourself directions.



### Maxthon Cloud Browser

PRICE Free  
PLATFORM 

Windows Phone isn't blessed with a huge range of browsers, but Maxthon beats IE hands down. For one, you can switch between tabs with simple swipe gestures, and you can jump to your favourite sites using a Live Tile-inspired Quick Access page. Best of all, if you use Maxthon's browser on the desktop, your bookmarks and other data

are automatically synced, just like with Chrome.





## NEWS READERS

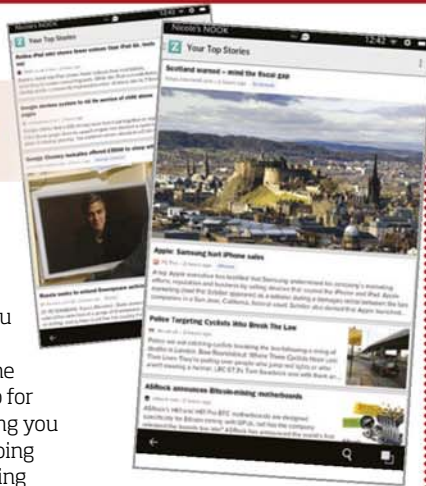
### Zite

**PRICE** Free  
**PLATFORM**     
★★★★★☆☆

There's so much to read online that it can be tough to decide what to click on next. Zite fixes this by learning what you like to read and pulling suggested stories into one place. It's the perfect app for weekend mornings, giving you an overview of what's going on in the world and digging up intriguing stories at the touch of a button. It's like a personalised magazine made by people who know you well and want to keep you happy.

The app lets you select a few topic categories, then tracks what you read, suggesting similar stories and topics. You can give stories a thumbs up or down to get more or less of the same, and if you particularly dislike a certain publisher, you can block them - that's right, imagine a world without The Guardian/Daily Mail (delete as required).

Zite also pulls in content from blogs and other fringe news sources, offering a wider selection of viewpoints and



chances to serendipitously stumble across something not normally on your reading list. Articles you like are easy to share or save for later reading, including offline.

Most stories are pulled directly into the app, with Zite reflowing the text and images cleanly and stripping out ads and other guff. You can also adjust the font and other settings to make it easier to read on your device of choice. Not all publishers allow their content to be pulled in, however, meaning every now and then you're yanked out of Zite and onto a web page; a warning message would be nice.

### Pocket

**PRICE** Free  
**PLATFORM**    
★★★★★☆☆

Pocket is the opposite of Zite, allowing you to save articles you find online to read later. If you're scrolling through Twitter, for example, rather than clicking "favourite" to bookmark it, click the Pocket icon to save it to the app. Pocket pulls in the text and photos, stripping out the rest for easier reading, and saves it for offline access.

Perhaps the best feature of Pocket is the way it connects to your browser. As you go about your day at your desk, click the Pocket extension to save interesting stories; they'll be sent to your tablet or smartphone ready to read on your commute home - even if your travels take you offline. Pocket can also be used to bookmark videos, although YouTube doesn't support offline viewing.

The app integrates with Zite and other suggestion tools, too, letting you save the stories they turn up.

### Digg

**PRICE** Free  
**PLATFORM**    
★★★★★☆☆

Digg's app isn't so concerned with what you want to read, instead highlighting articles and videos that are trending - the "must-reads" everyone else is talking about.

Of course, much of that content you probably won't be interested in, so you can fine-tune it by selecting topics from art to technology to warfare. You can also choose specific sources - we highly recommend [www.pcauthority.com.au](http://www.pcauthority.com.au) - which lets you mix popular stories with those you normally check when you're online. You can also connect social accounts to share stories you find, and use bookmarking tools - including Pocket (see left) - to save them for later.

Content can be read directly from the publisher's website or pulled into a stripped-down, easier-to-read format. Digg's app is a beautiful-looking return to form for the classic website.

## MESSAGING

### Viber

**PRICE** Free  
**PLATFORM**     
★★★★★☆☆

Viber combines the best of rival services such as Skype and WhatsApp. It's free, and allows you to send messages and make calls for free to other Viber users.

Viber requires your phone number and an activation code to get started, then scans your contacts list to see if any of your friends are using the service. You can then send messages to individuals or groups, and make calls



(although there's a charge for ringing non-Viber users from the app). The call function, plus a cleaner experience, puts Viber ahead of WhatsApp, but it's worth keeping track of storage and data consumption - voice messages, calls and conversation threads can quickly gobble up your space and allowance.

### WhatsApp

**PRICE** Free  
**PLATFORM**    
★★★★★☆☆

WhatsApp is the Android and iOS answer to BlackBerry Messenger, allowing you to send notes to friends or groups of friends at no (or little) cost. The app is free to use for a year, then requires a small annual subscription. It's hugely popular, so it's likely a good chunk of your contact list will already have WhatsApp, making it a cheaper way to send video, picture and international messages than SMS.

### GroupMe

**PRICE** Free  
**PLATFORM**     
★★★★★☆☆

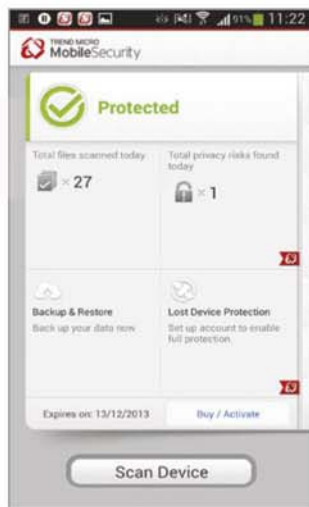
GroupMe offers similar group messaging features to WhatsApp - but it offers one advantage, despite its smaller userbase. The service is owned by Skype, which means its Windows Phone app is updated at the same pace as the iOS and Android versions. It lacks some of their features, but GroupMe may be a good option for Windows Phone users waiting patiently for other apps to update.

## MOBILE SECURITY

### Trend Micro Mobile Security

**PRICE** Free  
**PLATFORM**    
★ ★ ★ ★ ★

Unfortunately, no computing platform is completely safe from malicious code, and Android's free and open philosophy is ripe for abuse. The good news is that Trend Micro's free security scanner detected a stellar 99.5% of Android malware – without generating a single false alarm and without harming battery life or performance – in independent tests carried out by [www.av-test.org](http://www.av-test.org). This means you have nothing to lose by installing it. As a bonus, the package includes a privacy scanner for Facebook, which can warn you if you're sharing more personal information than you mean to. It also comes with 50MB of cloud backup for keeping your mobile



files safe, and advanced tools are available for \$US29.95.

It isn't only Trend Micro's excellent performance that makes it our top choice for mobile security. Its clear and friendly interface adapts automatically to suit a phone or tablet display.

### Norton Mobile Security

**PRICE** Free  
**PLATFORM**    
★ ★ ★ ★ ★

Norton does an exceptional job of intercepting malware – [www.av-test.org](http://www.av-test.org) gave it a 99.6% rating. The paid-for edition isn't cheap – it costs \$US29.99 – but it does plenty. As well as spotting malware, it can back up your contacts, block unsafe websites, lock your phone if the SIM card is removed, and even remotely take a photograph of whoever's using your phone – useful if it gets pinched. You can install it on multiple devices, too. A handful of features work on iOS as well as Android, although the iPhone version is, at the time of writing, much more basic.




### ESET Mobile Security

**PRICE** Free  
**PLATFORM**    
★ ★ ★ ★ ★

ESET's mobile security software will protect you from malware for free; upgrade to the premium product for a yearly fee and it safeguards your privacy as well. You can choose to block certain contacts at certain times of day, block the last number that called, or audit your device to see if any installed apps or connected networks may compromise your privacy. If your phone is stolen, ESET's app can control it remotely, even if an unrecognised SIM card is inserted. It's available only for Android devices, but that includes Amazon's Kindle Fire tablets, too.

## CLOUD

### Dropbox

**PRICE** Free  
**PLATFORM**     
★ ★ ★ ★ ★

Dropbox is so useful we genuinely don't know what we'd do without it – indeed, it helped us move a stack of screenshots from mobile devices to our desktop. It's simple to share a folder with friends, plus there's a host of handy mobile features, including one that allows you to automatically save to the cloud any photos you take with your smartphone. This keeps your handset storage clear and moves your photos out of the phone-only ghetto.

However, there are many rivals to Dropbox, and its allowance of 2GB of free storage is starting to look stingy. While it offers free upgrades of 500MB every time you convince a friend to sign up, it would take ten friends to reach SkyDrive's



7GB. And while it's truly cross-platform, easy to use and full of useful features, so are other cloud storage providers.

What makes Dropbox the winner is its integration with absolutely everything – we use it to store and transfer files without even thinking.

### SkyDrive

**PRICE** Free  
**PLATFORM**     
★ ★ ★ ★ ★



If you're using a Windows 8 tablet or Windows Phone device, odds are you're already using SkyDrive as your cloud client, but there's benefits to it on Android and iOS, too – especially if your email service of choice is Outlook.com. Its integration rivals Dropbox's in general, and betters it on Windows 8. In addition, SkyDrive comes with 7GB of free storage.

### Bitcasa

**PRICE** Free  
**PLATFORM**     
★ ★ ★ ★ ★

Bitcasa offers 10GB of free storage, but if you upgrade then your storage space is "infinite" – or, more realistically, as much as you can use. Like its rivals, it offers handy tools to automatically back up pictures and videos from mobile devices, and it makes it easy to keep selected files available offline for constant access.






## GAMES

### Plants vs Zombies 2

**PRICE** Free  
**PLATFORM**  

It's taken years for the sequel to the original Plants vs Zombies game, but it was well worth the wait. This free title offers all the simple charm of the original - earn sun, plant plants, kill zombies - but adds a new dimension, with supercharged plants (such as the melon launcher) and lots of side missions to play through. Available on Android and iOS, it's an absolute gem, and a must-download for any self-respecting smartphone or tablet gamer - it will keep you engrossed for weeks.

### Final Fantasy IV

**PRICE** \$16.99  
**PLATFORM**  

Final Fantasy IV first arrived in 1991, making this smartphone port of the Nintendo DS revamp a remake of a remake. The classic game has aged better than we have over that time: it looks better than ever, with smoother character models and a higher polygon count for backgrounds. The addition of touchscreen gaming for an RPG is ingenious: even menu-hopping becomes a tactile affair, and combat feels tense despite being turn-based. Too bad nothing can be done about the hammy story.

### Halo: Spartan Assault

**PRICE** \$6.99  
**PLATFORM**  

Halo is the Xbox's best-known game franchise, and its less graphically ambitious transition to mobile devices is nonetheless a success. It has everything you associate with Halo: a variety of futuristic weaponry, vehicles to commandeer and an intelligence-free pack of comrades who need you to dig them out of a firefight. The top-down approach and touchscreen controls work well. Trying to flog in-app purchases after charging a fiver is gratuitous, but they aren't necessary. Try the Lite version first.

### XCOM: Enemy Unknown

**PRICE** \$20.99  
**PLATFORM** 

Don't be put off by the higher-than-average price - this is one of 2012's best PC games, and it has transferred to the iPad without losing any of its greatness. Recruit and equip soldiers, then take them around the globe to battle the alien menace, before researching their technologies and adding them to your own expanding armoury. Updating and reimagining the 1990s classic, XCOM: Enemy Unknown is touchscreen, turn-based combat at its finest, and it offers tremendous replay value.

### ilomilo+

**PRICE** Free  
**PLATFORM** 

A Microsoft Studios game that has migrated from Windows Phone 7 to Xbox Live and now Windows 8.1, ilomilo+ is a delightful little timewaster. The idea is to reunite ilo and milo by navigating the 3D level they're trapped on opposite sides of. You alternate between both characters - using one to open trapdoors or create paths for the other - until they're reunited. It's clever and well presented, but perhaps too twee for some tastes. A two-player mode adds longevity.

### Scrabble

**PRICE** Free  
**PLATFORM**  

Facebook has helped Scrabble break free from its parlour game image: the ability to play against worldwide opponents is a godsend for word geeks. Previously online-only, the latest app extends the experience to iOS and Android, with neat touches such as the Teacher, who reveals (if you request) what your best score could have been after you've played your letters. You now get an unofficial Elo rating to see how you compare against the world.

### Drop 7

**PRICE** From \$2.88  
**PLATFORM**  

It seems crazy to choose a game from 2009, least of all one this simple, but there are few puzzle games with anything like Drop7's perfect gameplay. It's a matching puzzle, but skilled players plan several moves ahead, building chain reactions that can wipe the entire grid for huge bonuses - but rogue 1s and 2s always threaten to derail everything. It's the perfect five-minute game, which is why we're still filling journeys with it after more than four years.

### Star Wars: Tiny Death Star

**PRICE** Free  
**PLATFORM**    

This is a divisive one. On one hand, this *Star Wars* reworking of the classic Tiny Tower is an amusing time sink that will swallow the lives of fans as they check in every few hours to restock cantinas and capture rebel spies. On the other hand, the fact it plays out in real-time means you'll soon find yourself idly restocking cantinas and capturing rebel spies at work. It's dangerous, but that's the dark side for you.

### Dots: A Game About Connecting

**PRICE** Free  
**PLATFORM**  

The iPhone excels at pick-'em-up-and-put-'em-down puzzle games, and Dots falls firmly into that category. You have only 60 seconds to drag your finger over groups of the same-coloured dots, with extra points awarded for creating squares and rectangles. Other modes give

you only 30 moves, while an unlimited mode is a £1.49 add-on. It's a perfect commute-filler, and with online scoreboards that reset every week, there's a real chance of fleeting international glory for high scores. Frequent updates with new game modes help sustain interest, too.

### Despicable Me: Minion Rush

**PRICE** Free  
**PLATFORM**  

Current pinnacle of the running games genre is the superb Despicable Me: Minion Rush. Control Dave the Minion as he jumps, ducks and swerves obstacles, careering faster and faster down the road. Graphics are superb, gameplay is addictive - just watch those in-app upgrades.



# MEASURING

# ME

## HOW THE FUTURE OF SECURITY COULD BE YOU

FORGET ABOUT PINS AND PASSWORDS – THE HUMAN BODY COULD PROVIDE THE ANSWERS TO ALL OUR SECURITY QUESTIONS.

**DAVEY WINDER** INVESTIGATES

**A**pple has reignited the biometric-security debate by including a fingerprint scanner on the iPhone 5s. However, the possibilities for authenticating our devices using our bodies goes much further than our fingers.

Forget fingerprints; passwords are passé: what about smartphones that measure how hands “shake” when clicking icons; keyboards that analyse the speed and style of your typing; and wearable computers that track the way you walk and the pattern of your heartbeat?

All of the above are being researched and developed right now – which isn’t as surprising as it may seem. The top-end smartphones in our pockets are already highly sophisticated sensor clusters containing accelerometers, gyroscopes, compasses, thermometers, GPS units and biometric readers.

In this feature, we reveal how these “measurement of me” authentication systems work, when we’re likely to be able to use them and whether they really do offer greater security than your existing password.

### UNIQUE HUMAN BEHAVIOURS

Think biometrics, and chances are you’ll picture fingerprints. If you’re more imaginative – or up on your security reading – you may also think of facial or iris recognition. However, biometrics has moved on from these relatively simplistic measures of an individual, and can therefore be used as a method of authentication within the security sphere.

There are many unique human behaviours that can be monitored and together build up a biosignature that’s impossible to forge – think in terms of your gait as you walk, the pressure you exert when you tap or swipe a touchscreen, or even the routines you follow in a typical day. While such authentication alternatives sound advanced, they must prove their mettle against the oft-abused but ubiquitous password to ever become widely used.

To start, let’s consider SilentSense, an authentication framework being developed by researchers at the Illinois Institute of Technology, which uses data mined from “touch behaviour”,



including user biometrics and micro-movements of a device as it’s used. Researchers gathered data in the background using the sensors already integrated in a smartphone and, with their own software, were able to monitor and measure operating dynamics, such as touch, that are unique to the user.

In their research paper ([www.pcpro.co.uk/links/232bio1](http://www.pcpro.co.uk/links/232bio1)), authors Cheng Bo, Lan Zhang and Xiang-Yang Li explain how the three principal gestures of tapping (such as clicking icons), scrolling (reading emails,





browsing or tweeting) and flinging (turning pages in an ebook reader) are used to identify an individual. The features analysed include the co-ordinates where the screen was touched, the pressure exerted and the duration of the contact, all of which can be extracted from Android's application programming interface (API).

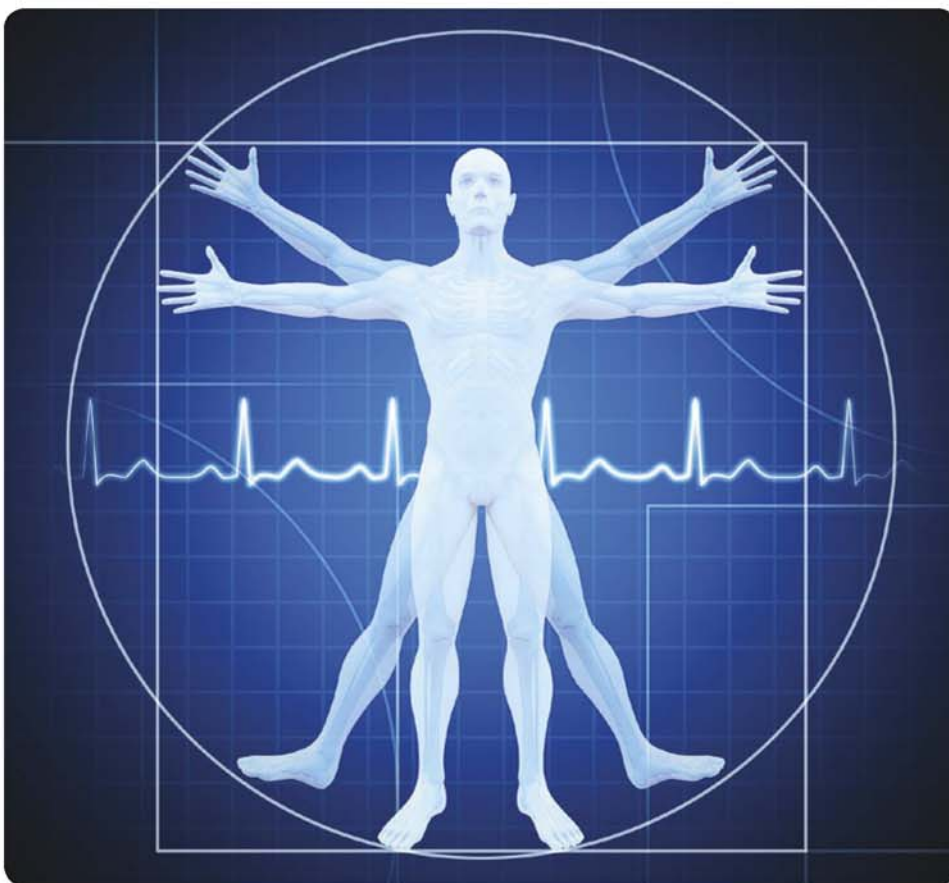
Since people touch their smartphones differently depending on the app they're using, both touch and "reaction" are measured. To measure the "reaction", the researchers looked at the position of the device and the

different amplitudes of vibration caused by each touch. These patterns can be readily observed by accessing the accelerometer and gyroscope built in to a smartphone.

The researchers also had to consider the context in which a phone is being used: if the user is walking, on a train or in a car, for example. They countered this problem by combining movement-based biometrics - which can identify your speed by the changes in movement of your device - with historical, touch-based biometrics to provide an authentication template

that proved to be more than 99% accurate during trials on Android-based HTC Evo 3D and Samsung Galaxy S III devices.

The end result is a method of verifying whether the current user is the authorised owner of the device based upon historical behavioural biometrics - the "measurement of me", in other words. All this is done in the background, continuously monitoring user behaviour in order to maintain the verification of identity whenever the phone is being held. If the machine-learning algorithms determine that



## “We’re mostly creatures of habit: we follow the same route to work every day”

a pattern is no longer a match, the handset can lock that user out. The software will switch on automatically during the use of sensitive apps (such as email or SMS, for example) to ensure protection, and switch off during extended gameplay to save power.

The accuracy of such methods is impressive, with a result of 99% achieved in testing after a maximum of ten screen taps. However, while this figure may sound sufficient, would you be happy if the one phone call out of a hundred you were locked out of was an important one? The accuracy figure isn't good enough, which is why any successful behavioural monitoring solution will have to combine methodologies.

### CREATURES OF HABIT

Markus Jakobsson of mobile malware firm FatSkunk suggests in a co-authored paper entitled “Implicit Authentication through Learning User Behavior” ([www.markus-jakobsson.com/wp-content/uploads/isc.pdf](http://www.markus-jakobsson.com/wp-content/uploads/isc.pdf)) that implicit authentication – using our daily routines, what we do and where we go – as additional data for such schemes is one solution.

Smartphones make collecting such data easy, thanks to GPS and mapping. Also, as Jakobsson says, we’re mostly creatures of habit: we tend to follow the same route to work every day, stopping at the same coffee shop; once we’re in the office, we stay in one broadly defined area until lunchtime, and so on.

Collecting data on such patterns provides a model of a user’s behaviour, but it also raises questions of privacy. However, Jakobsson and his colleagues had ethics in mind, so all phone numbers, SSIDs and URLs collected in the trials were obfuscated using a keyed hash. The key was randomly generated during the software-installation process, and stored – and all hashing performed – only on the device to which it pertained.

Using this data, the system tots up scores based on whether a user is conforming to their standard behaviour versus acting out of the norm. The technique computes an authentication score based on recently observed behaviours and the identification of “good” events, such as calling the same person or buying coffee at the same shop.

Conversely, the authentication score is lowered by a negative event, such as calling an unknown number or visiting a new location. Even time itself is seen as a negative event, with scores degrading as time passes. When the score falls below a certain threshold, the user has to input a passcode to continue or else they’re locked out; successfully authenticating with the correct passcode is seen as a positive and boosts the score again. It’s an interesting approach, and Jakobsson says it was robust enough in testing to prevent 95% of attackers from being successful.

### BIOMETRICS AREN'T DEAD

Not all of the “measuring me” security research is centered on behavioural patterns, however – biometrics is far from dead. Indeed, one huge advantage of biometric technology is that it’s available either now or very soon.

A good example of the latter is Bionym’s Nymi ([www.bionym.com/tech/](http://www.bionym.com/tech/)). Smart wristbands that monitor your pulse and send that data to a smartphone app are becoming commonplace among techie types for whom “fitness training” isn’t a dirty phrase, and Bionym is hoping the Nymi password bracelet will become equally popular. Unlike other wearable authentication concepts, the Nymi doesn’t act as a secure-code generator of one-time codes, but rather features an embedded electrocardiogram (ECG) sensor that monitors the heartbeat of the wearer.

Use of the heartbeat as a security metric is inherently more secure than a fingerprint, the company says. Indeed,



► The iPhone 5s’ Touch ID system was hacked days after launch



within days of the iPhone 5s going on sale, one German hacking group had revealed a method of lifting and cloning a fingerprint that would fool the Touch ID sensor. Although such fingerprint theft represents a very small risk to most people, the opportunity to steal something like your heartbeat pattern is smaller, given that it can't be left lying around and is protected inside your body.

Clasping the Nymi around your wrist turns it on, and touching the sensor on the top completes an electrical circuit, since your wrist is in contact with the bottom sensor that lets it monitor your heartbeat. The wristband will vibrate and the onboard LEDs light up to indicate that the monitoring and authentication process is complete. The Nymi knows you're wearing it, as will any connected devices and applications. The device itself also incorporates a built-in accelerometer and gyroscope; this combination means that it will support gesture-based unlocking.

It's an interesting development, not least since Toronto-based Bionym is already taking pre-orders at \$US79 per unit for delivery in the first quarter of 2014, but also since it provides three-factor security: authentication requires possession of the Nymi, possession of your heartbeat and possession of an authorised authentication device, such as a phone registered with the Nymi app.

But does it actually work? we haven't seen the Nymi in action, but one obvious question jumps out: will variations to your heartbeat – depending on stress, exercise, medication or illness – not affect the system? Bionym says that the device isn't looking at your heart rate, but rather the shape of your ECG wave. Signal-processing and machine-learning algorithms are employed to find unique features within the wave that are static over time; these are converted into a biometric template for the user.

What's more, the Nymi actually takes only one reading when you put it on – it doesn't continuously monitor your heartbeat, and this reading authenticates the user as long as they continue to wear the device. Once the Nymi is authenticated, the user can exercise as much as they like and it won't make any difference.

Anyone who has been unfortunate enough to require an ECG in hospital will know that performing an accurate one involves the attachment of numerous electrodes to the chest, arms and legs. Bionym insists, since this isn't a medical diagnostic reading, all that's required to take an authentication reading is the ability to monitor the electrical signal in the wrists and hands via completion of a circuit that "crosses



▲ Toronto-based Bionym is developing the Nymi, which uses pulse readings for authentication

the heart". This is why the design of the Nymi requires the user to touch the bracelet with the opposite hand when it's being activated.

That said, Bionym admits that it's still testing how people with a mechanical heart valve or those suffering from heart disease, for example, will affect Nymi's accuracy. While this testing is ongoing, the company will offer a full refund to anyone encountering problems. Privacy-wise, the ECG data captured by the Nymi is stored cryptographically within the hardware itself, and applications require user permission to access this digitally signed data.

### THE END OF PASSWORDS?

Such projects are intriguing, but are they necessary? Most people are happy using single-factor authentication (see *Identifying authentication*, right),

but reliance upon passwords alone can't continue if we want our data to be safeguarded in an environment that's increasingly under the criminal microscope.

For now, two-factor authentication seems a good balance of security, distribution cost and ease of use, but it still has weaknesses. Ease of use has always been the primary driver for PINs and passwords, since security measures are useless if nobody employs them because they're too difficult or time-consuming. The problem is that the number of services we use and the complexity of passwords required to secure them has increased to the point of insanity. Password managers help, but they're only a sticking plaster. This is why the real solution may come in the shape of a third factor: who you are. ■

## IDENTIFYING AUTHENTICATION

What is authentication, and why aren't passwords secure enough? Everyone online uses a username and password/PIN combination: the username identifies you to the device or application; the password confirms that it's really you using that identity. Well, that's the theory. All it really does is confirm that you're someone with access to that information.

In security terms, it isn't very secure at all. The more complex the password construction, the harder it becomes to crack, and if that password follows the industry best practice of being more than eight characters long and comprising upper- and lower-case letters, numbers and non-alphanumericals, it becomes tougher on those who would adopt your identity. Unless, of course, you write it down and someone borrows it, or you use one password across services and someone

gains access to an unencrypted password database for one of them, and so on.

Relying upon this knowledge factor alone when it comes to authentication is dangerous, and a glut of high-profile breaches exposing logins is proof of this indisputable security pudding.

It's far more secure to combine authentication factors and thus make knowledge (something you know) only one strand in the identification process. Add ownership (something you possess) into the mix and your security levels increase exponentially.

Most people who bank online will already be familiar with this sort of two-factor authentication; the chances are your bank has sent you a hardware token, which generates a one-time code that must be entered after you have already passed the standard user/password challenges.



# CLOSER TO REALITY

COMPUTER GRAPHICS ARE ABOUT TO TAKE A HUGE LEAP TOWARDS PHOTOREALISM RENDERED IN REAL-TIME. **STUART ANDREWS** PAINTS A PICTURE...

**P**hotorealism is the holy grail of computer graphics. In movies, whether artists are recreating tigers and raging oceans for *Life of Pi*, or building giant monsters and battling robots for *Pacific Rim*, the goal is to create something that looks real.

Even when realism isn't the principal aim - as in *Despicable Me 2* or *Monsters University* - the studios are looking for something to take their film to the next visual level, whether that's through natural textures, realistic fur or sumptuous lighting.

Photorealism is just as important for

games. It might not mean much in an artsy independent game or an iPhone time-waster, but for racing games, fantasy adventures and hard-hitting action titles, the more realistic the graphics, the easier it is to immerse the player in the game's world. Each new hardware generation, GPU and game engine takes us one step further.

Games and movies face two sides of the same problem. The offline computer graphics (CG) used in movies - where scenes are set up then rendered frame by frame - have produced photorealistic effects for more than a decade.

However, this approach is slow and expensive, and makes it awkward to tweak scenes or try different styles or angles. Game developers, on the other hand, must balance their desire for photorealism with the need for interactivity. A high-end PC could produce Pixar-quality graphics, but not at a playable speed.

Both groups need something that can create photorealistic results in real-time.

Amazingly, this might be just around the corner.



## APPROACHING PHOTOREALISM

Tim Sweeney, the brains behind Epic Games' hugely successful Unreal Engine, told the Develop conference in July that "we'll be able to render environments that are absolutely photorealistic within the next ten years".

At this year's Game Developers Conference, Epic unveiled a demo for the upcoming Unreal Engine 4, showing movie-quality animation running on a single Nvidia GeForce GTX 680. Meanwhile, Mark Cerny, PlayStation 4's architect, told delegates at Develop that "we are at the point in the PlayStation 4 generation where we'll forget sometimes that we're looking at CG, rather than captured video". This doesn't mean it will be indistinguishable, but "at times we'll be able to forget", he said.

Pixar-quality cartoon rendering in real-time is also on its way. In 2012, Unity Technologies revealed *The Butterfly Effect*, a short film running in real-time in the Unity engine with Nvidia GPUs. Using techniques traditionally reserved for offline rendering, its visual quality is hard to distinguish from the work being produced by Hollywood CG studios.

According to Sean Tracy, US engine business development manager for Crytek, the time for real-time photorealism is now. In February, Crytek launched *Crysis 3*, and its CryEngine 3 graphics engine is now powering key games for next-generation consoles and more serious simulations. "We've considered our technology able to achieve photorealism for quite some time," claims Tracy, even if "the distinction of being photoreal or not is mainly subjective, and heavily dependent on the quality and talent of artists working within a particular piece of technology." He believes CryEngine provides the tools artists need to create



▲ *The Butterfly Effect* is a short film created with the Unity engine using real-time rendering

photorealistic graphics. The rest is up to them.

CryEngine 3 is capable of impressively realistic visuals. Using tessellation, it can create lifelike surfaces and shapes, so that objects, characters and scenery look more realistic at a distance, or when viewed close up. Parallax occlusion mapping gives surfaces self-shadowing and an almost tangible illusion of relief, and next-generation systems replicate

## "We'll forget sometimes that we're looking at CG, rather than video"

the way lights of different hues interact with each other and different surfaces.

You can see all this at work in *Crysis 3*, and in Crytek's recent launch title for the Xbox One, *Ryse: Son of Rome*, which features realistic characters and cinematic effects.

CryEngine is also being used outside of games. French firm Enodo uses CryEngine 3 to build virtual environments that can be used to visualise architectural or urban-planning projects – such as Nice's new tramway system – while they're still in

the blueprint stages.

## THE MARCH OF PROGRESS

What's made this possible? First, GPUs have grown exponentially more powerful in the past five years. The fastest processor of 2008, the Nvidia GeForce GTX 280, had 240 unified shaders and a peak processing performance of 933 GFLOPS; this year's equivalent, the GeForce GTX Titan, has 2688 unified shader units and a peak processing power of 4.5 TFLOPS. These are high-end processors, but this explosion in performance is mirrored lower down the line, not to mention in new console GPUs – the processors in the Xbox One and the PlayStation 4 are based on versions of AMD's Radeon HD 7790 GPUs.

Second, GPUs now have more memory to work with. In 2008, high-end PC graphics cards shipped with a maximum 1GB of RAM; now, they come with 3GB or even 6GB. The PlayStation 4 and Xbox One, meanwhile, have 8GB shared between the CPU and GPU. That gives developers more headroom for high-resolution textures and more complex scenes and shaders.

Finally, the software APIs that control these GPUs are becoming ever-more flexible and efficient. Microsoft DirectX 10 was a watershed, ditching fixed-function processing units for unified processors that can work on geometry, textures or anything else.

DirectX 11 (DX11) took this even further, adding hardware tessellation and GPU Compute support, enabling all the parallel processing horsepower of the GPU to be used not only for standard 3D processing, but also for any task where the developer can see benefits. This, Crytek's Tracy feels, is where GPU Compute technology will really come into its own. "Easily the biggest step forward, and the most exciting in my opinion, is the ability to use DX11 and the compute shader," says Tracy. He believes this will allow



▲ Epic Games' *Infiltrator* demo showed off Unreal Engine 4's movie-quality animation



▲ French developer Quantic Dream showed off its photorealistic skills at the E3 conference

pioneering developers such as Crytek to experiment with more realistic lighting- and materials-rendering systems. However, he warns that there isn't a single "smoking gun" that will solve any major problems for this generation. "DX11 and [GPU] Compute are nice, but they'll require significant engineering to get out every ounce of performance and fidelity," he argues.

According to Silvia Rasheva, producer for Unity Technologies, the technology is improving, but it isn't there yet. "New game consoles are a significant step forward if we compare with the previous

generation," she says. "But if we compare with offline graphics, which usually use clusters of machines to render a single frame in 40 minutes to two hours, then real-time hardware is pretty far away."

For Rasheva, the problem isn't so much the complexity of the models or the shaders used. Instead, what separates film CG rendering pipelines from real-time 3D rendering pipelines are computationally expensive techniques such as high-quality motion blur, complex volumetric effects for explosions and fluids and - most of all - high-quality global illumination.

Rasheva believes that tools being adopted for real-time rendering will help. Procedurally generated textures will do a better job of simulating real-world materials, and mean that "instead of painting every pixel with certain colours, artists will paint where metal, plastic or rubber should go".

New processes will allow artists to capture the textures and physical properties of surfaces directly from physical objects, including people. Rasheva also cites "physically based shading", which involves "[emulating] the physical properties of materials, instead of the bunch of hacks that have been used traditionally".

Lighting, however, is different. "On a purely hardware level, real-time lighting and shadowing is the most computationally expensive and memory-hungry problem," Rasheva says. "To solve properly, it requires both different algorithms from what has traditionally been used in real-time graphics and excessively more computation power." Rasheva feels that the short-term solution will be hybrid approaches that combine the traditional rasterisation pipeline with limited ray tracing to help artists simulate reflections and occlusion with more accuracy.

## THE TECHNIQUES THAT ARE TRANSFORMING 3D

### GLOBAL ILLUMINATION

Early 3D rendering techniques modelled only direct illumination, following the path that light took as it came from a light source and bounced off a surface towards the camera. In reality, the way we see objects is affected not only by direct light, but by the way that light is reflected throughout the scene. Global illumination simulates this to create more photorealistic images. Screen space directional occlusion allows for an approximation of global illumination that will run on current GPUs, but techniques such as path tracing may be essential in the future.

### PATH TRACING

This renders 3D scenes by tracing rays across the scene as they bounce between light sources, objects and the camera, then averaging the samples to create a final colour value for each pixel. The more rays - or samples - the path-tracing engine can track, the more accurate the rendered frame will be. Since path tracing uses physically

accurate materials and simulates the physical effects of light in the scene, it handles effects such as colour bleeding, soft shadows, reflection and depth of field far more realistically than traditional rasterisation or even ray-tracing techniques.

### PHYSICALLY BASED RENDERING

This approach to 3D rendering simulates the real-world interactions of light and

materials in order to create an accurate photorealistic result. Instead of using a bag of tricks to create the illusion of photorealism, it puts all the elements in place for photorealism and lets the simulation do the work. Physically based rendering is computationally expensive, but it might be the way graphics go in future.

### SUBSURFACE SCATTERING

Materials in the real world don't simply reflect light; they also absorb and scatter it beneath the surface, both softening and spreading the illumination. Subsurface scattering simulates this effect. It's crucial to the realistic representation of human skin.

### TESSELLATION

This breaks down coarse polygonal models into smaller triangles. Tessellation is often used to refine and smooth out elements in a scene when viewed close-up, or to create a convincing impression of surface relief that works from every angle. It's essential for producing scenes of detail and complexity.







▲ Otoy's Brigade rendering engine drops traditional rasterisation in favour of path tracing

## THE PATH AHEAD

There might be another way. Otoy is a Los Angeles-based company that set out to make its mark by rendering movie CG in the cloud. Along the way, however, it acquired two technologies that have made it one of the most exciting new players in real-time 3D graphics.

The first is Octane Render, a plugin for industry-standard 3D graphics applications that harnesses the power of modern GPUs to create Hollywood-quality, physically based renders in near-real-time. This is a big deal. At present, directors working on CG or CG-heavy movies work with pre-visualisation artists to block out the action and lighting in each shot, using primitive versions of the models, materials and lights for the sake of speed. It isn't until the scene goes into production and is rendered out – a process that takes time and money – that the director can see how the scene is working. Utilising industry-standard applications such as Autodesk's Maya and 3ds Max, Octane allows directors and artists to render out near-production-quality frames as they work.

"They can move around the scene in real-time on their own system, and that is a game-changer," says Otoy CEO Jules Urbach. "Before you go out and send your pre-visualisation art to a company such as Weta or Digital Domain, you can actually get a final render. Rendering used to be a complex, time-consuming and resource-intensive process. With Octane, it no longer is – it's something the director and the pre-visualisation artists can leverage right at the beginning of the process."

The result, Urbach says, is "a fundamental change in the way that films are made," where directors and artists can play with the scene and see their changes reflected in real-time before their eyes. "There's a lot of guesswork we do in CG," he explains,

"and it was a real art form to do something in the Maya or Max viewport and work out how it would finish up looking when you hit the render button. That's gone. We really are at a higher quality than most final renders."

What's more, the fact that Octane can create high-quality renders on a comparatively affordable setup, with only a few – albeit high-end – GPUs, or even from a server in the cloud, democratises CG movie-making. Octane will not only be used in cinematic blockbusters, it will also be turned to independent animated shorts and features.

Brigade takes the same approach to in-game graphics. It's a real-time rendering engine that drops the traditional rasterisation pipeline in favour of path tracing to create physically correct, photorealistic images. "Every time you want to move to real next-generation rendering, you're hitting a wall, since you're effectively faking everything," explains Urbach.

## “Rendering used to be a complex process... it no longer is”

Brigade, however, is different.

"With path tracing, you're getting into a whole different class of rendering, where you're rendering the real world... If you let Octane or even Brigade run its course, then you'll get a physically correct image, and if the materials are physically correct, that image will look like a photograph."

Brigade is impressive. Global illumination simply works, since Brigade is using GPU Compute functions to trace the path of each ray of light as it bounces off the different surfaces in the scene. Soft shadows, motion blur, reflections and caustics all look more convincing, since path tracing naturally simulates

these effects as part of the process.

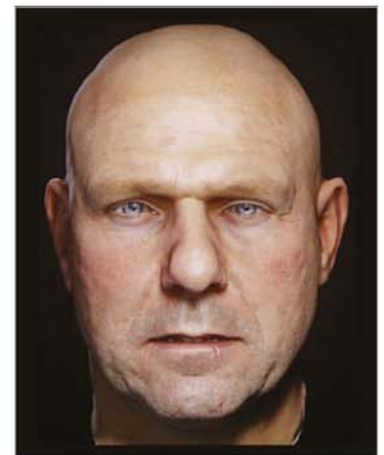
Unity's Rasheva believes this is the natural way forward. "Real-time engines are definitely moving towards more generic approaches to solving lighting, reflections and shadows," she says. "For fully functional path tracing, we need between 10x and 100x performance improvement on the GPU/CPU side, but that's probably inevitable."

Crytek's Tracy wouldn't rule it out, either. "There's no question that with the increased capabilities of hardware, there will be many different rendering techniques [available] that may have been used offline in the past."

However, Otoy's Urbach believes it's possible now, albeit on heavy-duty hardware. Try path tracing without sufficient power and the image suffers from noise. At present, it takes two Nvidia GeForce GTX 780 cards to run Brigade at a smooth frame rate with minimal disruption; this kind of power won't become mainstream overnight.

In the meantime, Urbach's company has a backup plan, which involves altering the Brigade pipeline to reduce noise, and optimising the engine so it will even run on next-generation consoles. "The goal of Brigade 3 is to get the speed, quality and features of Brigade 2 and Brigade 1, but to have it fully usable for gaming," he says.

Urbach is in no doubt that Octane and Brigade have a part to play in the future of real-time 3D. Otoy's LightStage tool allows artists to acquire real-world materials for physically correct simulation, while Octane allows artists to work with those materials in fully path-traced scenes in real-time. Brigade then renders those scenes out with global illumination and realistic reflections, depth of field and motion blur in real-time. "The next level of realism is realism," he says. "It's photorealism through and through." ■



▲ Crytek believes real-time engines can already create photorealistic images

# IN THE LABS

YOU WON'T FIND  
BETTER REVIEWS  
ANYWHERE  
IN AUSTRALIA!

## The next level

**DAVID HOLLINGWORTH** LOOKS AT THE INTERESTING TIMES AHEAD FOR *PC & TECH AUTHORITY*, AND WHAT OUR NEW OWNERS MEAN FOR YOU, OUR READERS

**S**o. There's a few changes afoot in the *PC & Tech Authority* Labs. In fact, the *PC & Tech Authority* Labs will have moved by the time you read this, from our old offices in McMahon's Point, to rather shiny new digs at St. Leonards (with a rather swish view of Sydney Harbour, if I may add).

But that's mere geography - the even bigger news is that *PC & Tech Authority* is now being published by nextmedia. After a good ten years in Australian publishing, Haymarket's now handed over the reins to next, along with us (and our stablemates ITNews, CRN and a few other titles).

So what does this mean for you?

Well, to be honest, not a lot. We're still working toward the same goal as before - to produce a great PC and technology magazine aimed at all levels of consumers and enthusiasts. We'll still be reviewing, writing the same great features from the same great stable of writers, and utilising some of the best experts in their field for our Real World Computing columns. We'll still be the same cover price, still aiming to deliver our DVD each month, and still going on sale on the same day.

In fact, I'm hoping things will get even better in the long run, because it now means we have a couple of other related magazines in the same company, in the shape of Hyper and PC Powerplay. Though focused more on gaming, PC Powerplay in particular has some great hardware reviewers, so we're looking forward to being able to really take advantage of a rather impressive brains trust of writers.

But otherwise, business as usual on the magazine, the website, and our various social media channels. Which you should of course check out, by the way!

So, this issue? Well, we have three very interesting takes on modern PCs. Two are from local system builders, and each takes a very different route to high-end performance. The other is the rather versatile ASUS Transformer, so it's a fascinating look at the breadth of modern computing form factors and building.

And our Tablet Labs is full of great hardware, but comes to an interesting conclusion... which I'll let you discover for yourself.

See you next issue!

### DAVID HOLLINGWORTH

is our Managing Editor. In between reviewing games and hardware, he looks after *PC & Tech Authority's* website and social feeds.



### WHAT OUR A-LIST MEANS

Our A-List award is reserved for the best products in each category we review. With a winner and an alternative pick in each, that's 92 products you know are first class.



### WHAT OUR AWARDS MEAN

*PC & Tech Authority's* comprehensive Real World testing sorts out the best products from the pack. Any product recommended by *PC & Tech Authority* is well above average for features, value for money and performance.



### WHAT OUR RATINGS MEAN



OUTSTANDING  
VERY GOOD  
GOOD  
ORDINARY  
POOR  
VERY POOR



# HOW WE TEST



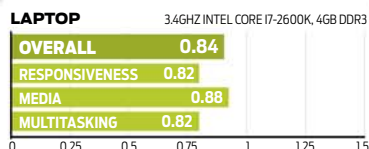
OUR BENCHMARKING TESTS ARE THE BEST IN THE BUSINESS. READ ON TO FIND HOW THEY WORK...

## 2D TESTS

We test desktop PCs, netbooks and laptops with our own, custom-built, 2011 Real World Benchmarks.

We split the results into three categories: Responsiveness, Media and Multitasking, with the Overall score an average of the three sub-scores.

For instance, responsiveness replicates light browser and productivity workloads. The Media test involves running iTunes for audio conversion, Photoshop CSS to crunch large images and Sony Vegas 10 to edit home video. This then gets run simultaneously alongside Cinebench 11 in order to get a handle on the multitasking ability of the system.



## 3D TESTS

We use pre-recorded demos in Crysis and DIRT 3 to test gaming performance where relevant. We have three standard test settings, depending on the power of the graphics card: Low, Medium and High.

To test gaming performance, we use our own recorded Crysis benchmark. We use the Low, Medium and High quality settings in 1366 x 768, 1600 x 900 and 1920 x 1080 screen modes respectively. Very high-end systems can also be tested using the ultra-intensive Very High settings, with all detail switched on, and varying levels of anti-aliasing enabled.



## LAPTOP BATTERY LIFE

We subject laptops to two battery tests. In the light-use test, we optimise the system settings for the greatest power efficiency. We then disconnect the mains and run a script scrolling a selection of web pages until the system shuts down, giving you a realistic idea of the surfing time each laptop offers.

For the heavy-use test, we engage Windows' High Performance power profile, set the display brightness to maximum, and allow the taxing Cinebench 3D renderer to push the processor load to the limit. This gives a worst-case figure, revealing how long you can expect the battery to last under the most demanding conditions.



## GROUP TEST BIG SCREEN TABLETS 54



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## NEXUS 5

THANKS TO ITS ALL-ROUND TOP PERFORMANCE AND A PRICE THAT UNDERCUTS ITS CLOSEST RIVALS, THE NEXUS 5 IS OUR NEW FAVOURITE SMARTPHONE

**PRICE** \$399 (16GB); \$449 (32GB)  
**SUPPLIER** [play.google.com](http://play.google.com)

If the Nexus 4 was a breakthrough for Google's smartphone brand, the Nexus 5 could be the model that sees it stride ahead of the rest of the market. Why? Because it takes a successful formula and adds improvements all round, yet retains the main draw of the original – a very reasonable price. The 16GB Nexus 5 costs only \$399, undercutting the outright price of all its near rivals – the Samsung Galaxy S4, the HTC One, the iPhone 5s and the iPhone 5c.

However, there's nothing cut-price about this unit. The Nexus 5 isn't as glamorous as its predecessor, but it can certainly hold its head up. In fact, its design is similar to the recent Nexus 7 tablet, with a matte-

black, soft-touch plastic rear, the Nexus branding emblazoned upon it in large letters, and a camera lens housing that slightly protrudes.

It doesn't have the premium feel of the HTC One or the iPhone 5s – and it isn't the slimmest around, at 8.9mm – but there's nothing cheap about this phone. The Gorilla Glass 3 on the front means it should resist scratches and drops better than most, too.

### DISPLAY

The Nexus 5 has a 4.95in IPS display with a resolution of 1080 x 1920 and a pixel density of 445ppi. Yet, despite the large screen, LG – the device's manufacturer – has managed to limit the size of the phone so it doesn't feel bulky in the hand.

Screen quality is excellent. It isn't as richly saturated as the Super AMOLED panel on the Galaxy S4, but its top

brightness of 508cd/m2 is far better, which leads to better readability in bright sunlight. The 888:1 contrast ratio also ensures images, video and graphics all look their best.

The HTC One's display, on the other hand, is a touch brighter and has a higher pixel density. Otherwise, they're neck and neck.

### INTERNALS, PERFORMANCE AND BATTERY LIFE

When it comes to hardware grunt, however, the Nexus 5 motors ahead of its two big rivals. Inside is a quad-core, 2.3GHz Snapdragon 800 CPU – the same processor found in the lightning-fast Samsung Galaxy Note 3 (web ID: 384823) – and it's coupled with an Adreno 330 GPU and 2GB of RAM. With the new Android KitKat operating system onboard, navigating the OS and browsing the web feels slick.



It's a combination that delivers superb performance in benchmark tests, too. With scores of 2539 in Geekbench 2 and 24fps in the demanding GFXBench 2.7 T-Rex HD test, it's faster than both the Galaxy S4 and the HTC One, and it shines when tasked with taxing games such as Asphalt 8: Airborne.

Battery capacity isn't as high as that of the Galaxy S4 – 2300mAh compared to 2600mAh – and it showed in our tests. We carried out a series of typical tasks over 3G in one 24-hour period and noted the capacity remaining at the end of that time; the Nexus 5 lagged behind its rivals, with 50% remaining on the gauge at the end of our test period. As with most modern smartphones, you'll need to charge it every day; in fact, you may have to plug it into the mains at the beginning of the evening, too. The Samsung and HTC will give you a few more hours.

## CAMERAS

Oddly, the Nexus' turn of speed doesn't translate to the device's 8-megapixel camera, a curiously underpowered inclusion considering the competition. It's reasonably quick to fire up – plus you can launch it from the lockscreen with a quick left-swipe of the camera icon – but it can take up to three seconds from pressing the onscreen shutter button to image capture, which is frustrating.

Image quality is so-so. Often, we found the autofocus failed to get a lock, resulting in soft, blurry photos. Metering was inconsistent, too: with areas of light and dark within the frame, such as a bright sky and a shadowy city street, we found that the



▲ The Nexus 5's design is similar to the Nexus 7 tablet, finished in soft-touch matte-black plastic

camera struggled to find a balance, either overexposing the former or underexposing the latter.

This is a shame, since the sensor and optical image stabilisation system are capable of producing detailed snaps. The camera is effective in low light, too, and can shoot steady, handheld video at 1080p. Also, if you switch on the new HDR+ feature, the metering issues are largely addressed, lightening foreground areas and keeping bright skies in check. However, this slows shot-to-shot times further, and doesn't work well with moving subjects.

## KEY SPECS

Quad-core 2.3GHz  
Snapdragon 800 CPU  
• 2GB RAM • 16/32GB storage • 4.95in 1080 x 1920 IPS display • GSM/WCDMA/3G/HSDPA/4G • dual-band 802.11ac Wi-Fi • 8MP/1.3MP rear/front cameras with 1080p/720p video • 2300mAh battery • Android 4.4 (KitKat) • 1yr RTB warranty • 69 x 8.9 x 138mm (WDH) • 136gw

## CONNECTIVITY AND AUDIO

Finally, as you'd expect from a top-end smartphone, the Nexus 5 delivers in terms of connectivity: you get dual-band 802.11ac Wi-Fi, NFC, Bluetooth 4, GPS and 4G support. Audio quality is fine, too, both in-call and from the speaker at the bottom edge of the phone.

The one black mark against the Nexus 5 is the absence of a user-replaceable battery or a microSD slot. However, as reported on teardown site iFixit, the rear panel can be removed far more easily than most.

## VERDICT

The Nexus 5 is a superb smartphone: we like the design; it's as powerful as they come; the screen is great; it runs the latest version of Android; and the camera – although a weak point – is capable of producing good snaps and video if you're patient.

It's the price, however, that swings things in favour of this Android handset. At \$399 for the 16GB version, and \$449 for the 32GB one, it undercuts its rivals significantly. That, coupled with its all-round capabilities, help to push the Nexus 5 to the top of the PC&TA A-List.

**Jonathan Bray**

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

## Android 4.4 KitKat

One of the principal attractions of investing in a Nexus handset is the fact you always receive the latest Android updates when they're released; owners of HTC or Samsung handsets have to wait. The Nexus 5 runs Android KitKat, the successor to Jelly Bean.

KitKat isn't a step-change for Android, but it brings with it significant refinements and new features. The first is a slightly simpler design. What were clearly delineated bars at the top and bottom of the screen are now transparent, which makes the homescreen feel more spacious, and the Widgets tab on the app drawer has been done away with. (To add a widget in KitKat, you hold a finger on the homescreen background for a

second or two.)

Google Now has been given greater prominence, with a swipe from the left of the homescreen – in addition to the familiar drag up from the home button – now launching the search/personal assistant. The Nexus 5 comes with Quickoffice preinstalled, complete with word processor, spreadsheet and presentation software, integration with Google Drive and 25GB of Google Drive space.

Google has introduced a caller ID service, too, which attempts to match business names with incoming numbers for callers not in your address book. You also get extended voice-control features, and, in a strange move, Google Hangouts now handles text messages.



# GIGABYTE BRIX WITH INTEL IRIS PRO GRAPHICS PREVIEW

YET AGAIN THE NUC CONCEPT SUFFERS FROM OVERLY NOISY COOLING

PRICE TBA

SUPPLIER [www.gigabyte.com.au](http://www.gigabyte.com.au)

**W**e have been quite fascinated with Intel's Next Unit of Computing concept. It takes the advancements in power consumption and thermal performance of Intel's mobile push and aims to produce a pretty powerful PC in a very small space.

Unfortunately, apart from designs with very specific usage cases, such as Gigabyte's BRIX projector, which combines a low res DLP projector with a NUC system, we have been constantly let down by the end products. Chiefly, it keeps coming down to thermals, and makes us wish that someone would do some serious engineering work on the cooling designs for NUCs.

Because of limited space, the NUC needs a fairly small fan. The problem with this is that in order for a smaller fan to push enough air it needs to spin much faster than a larger one. What results are systems that are fine when idle but at the first sign of CPU load start to howl. We've experienced similar issues with some Ultrabook designs as well, and the noise is most definitely noticeable in a standard office or home environment.

The return of the dreaded howling fan really dampened our initial enthusiasm for the latest BRIX unit from Gigabyte. This is the one we've been waiting for since we first heard of it, a design that features Intel's top end Iris Pro graphics. It is quite disappointing that, despite the hype over this design with its on-package memory, we have seen only a single system to date using it, Venom's Blackbook Zero laptop.

As we discovered when we previewed that product, the Iris Pro is a pretty respectable GPU, and while it can't compete with the big boys, it can deliver a perfectly enjoyable gaming experience at low to medium detail. It would be enough for a low-end Steam machine, for example, and great for a media PC that is used for the occasional bout of gaming. But it also shows why the Steam machines (and indeed the next generation consoles, with their relatively low power

processors) shown off to date are all relatively large - not only do you need room if you want fully-fledged desktop performance, but you also need space in order to efficiently cool hardware running games at full tilt.

For such a tiny system, the performance is indeed impressive. In our real world benchmarks we saw an overall score of 0.88, showing that the system can hold its own with a lot of the fully-fledged desktops on the market, and in our Crysis benchmarks we saw playable medium detail framerates of 58fps, which dipped to borderline playable at high detail. With a bit of tweaking though you can get games looking decent enough at 1080p resolution, although we wouldn't try to game at higher resolutions than this.

But again, for every usage case that we can think of for this system, the constant howling of the fan would be a massive downside.

Our other concerns with the system are quite minor - the Gigabyte logo and embossed Intel Iris Pro Graphics on the front work against the general look and feel of the BRIX, and we would have liked more than the four USB ports built into the chassis. Neither of these are dealbreakers, but we feel that the fan noise would be.

Which is a shame, because the unit has so much going for it. Gigabyte has

## KEY SPECS

Core i7-4570R • Iris Pro GPU (HD 5200) • 320GB HDD • 4GB DDR3

opted for a standard 2.5in hard drive in our review unit, rather than requiring an mSATA drive - it was indicated that the BRIX would be shipping with a hard drive, but at the time of writing we still didn't have details about the exact form this PC would take when it hit the market - hence our treatment of this as a preview rather than a full review.

If Gigabyte can sort out the cooling design for the BRIX we'd be behind this unit in a big way. As it stands, it goes the way of many other NUC implementations - great concept, largely great execution, but with a critical flaw that holds us back from being rampantly enthusiastic about it. If the cooling can be quietened and the cost kept relatively low, this could be a great option for a secondary PC, capable of some light gaming and everything else you want to throw at it.

**John Gillooly**

3D SPEED		GOOD	PLAYABLE	UNPLAYABLE
HIGH SETTINGS	26FPS			
MEDIUM SETTINGS	58FPS			
LOW SETTINGS	125FPS			

BENCHMARKS		3.4GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1
OVERALL	0.80	
RESPONSIVENESS	1.00	
MEDIA	0.84	
MULTITASKING	0.88	

# TI DELUXE 290X

A GAMING BEAST THAT DOES ITSELF A DISSERVICE AT 1080P

**PRICE** \$2430

**SUPPLIER**

www.ticomputers.com.au

One of the most enduring sources of debate in the PC & Tech Authority Labs is when and why one should pay a premium for technology. When it comes to gaming laptops, for example, we are firm believers that a few extra bucks will ensure you get the best possible experience, and that you shouldn't compromise.

When it comes to desktop PCs, however, we don't subscribe to the same philosophy. There can often be a vast gulf between good enough and extravagant. When it comes to laptops you don't get a second chance to spec the machine out, however with desktops you can always tweak the design down the track if you feel it is lacking in some department.

The reason this debate has kicked off again this month is that we have been reviewing this system from TI computers, and the more monstrous gaming beast from Katana systems on page 46. You couldn't get two more diametrically opposed gaming systems; Katana has delivered a system with flashy design, dripping with premium components and featuring two Radeon R9 280X cards, whereas TI has delivered a less flashy PC, built in a reasonably priced Bitfenix Ronin case and featuring a single Radeon R9 290X card.

This difference in presentation comes with a huge price gap, but more surprisingly, the cheaper TI system sports better CPU performance and a GPU performance that is almost as good as the Katana's. This is because the Core i7 4770K CPU in the TI Deluxe 290X comes clocked at 4.4GHz, which translates to an overall score of 1.19 in our real world benchmarks. In contrast, the Katana system comes in with an overall score of 1.14.

While this difference is admittedly small, it is a great indicator of how the right choice of componentry can deliver a system that punches beyond its price range, one that will deliver

excellent gaming now and for the foreseeable future.

Besides the overclocked CPU and R9 290X, the TI Deluxe 290X includes 16GB of DDR3, a 120GB SSD and 2TB HDD and 750W PSU. The CPU itself is cooled by a massive dual fan Noctua cooler – which looks a little odd through the Ronin's side window, but that is a small complaint when faced with this much performance.

Our only real query is the choice of monitor included with the system. TI has opted for a 27in AOC i2757Fh monitor, a nice looking IPS screen that unfortunately tops out at 1920 x 1080 resolution. While this is a pretty standard gaming res, it really doesn't do the system justice, with the R9 290X really targeted at those gaming at 2560 x 1440 or higher resolutions. If you are running games at native resolution on this screen then you'll find a lot of performance going to waste, and while you'll be able to run pretty much everything at maximum, you'd be better served with a higher resolution screen. We'd suggest opting against this one and going for something that supports 2560 x 1440.

As for gaming, the TI Deluxe 290X smashed its way through our benchmarks, delivering playable Crysis 3 at high detail levels and managing 73fps in our very high detail Crysis benchmark. This shows how much

## KEY SPECS

Core i7-4770K  
@4.4GHz • 16GB DDR3  
• Radeon R9 290X •  
120GB SSD 2TB HDD

of a disservice pairing the PC with a 1080p screen is, as it is clearly capable of producing much more performance than the screen needs.

Even though it is noticeably cheaper than the system from Katana, the TI Deluxe 290X is not going to be a system for everyone. It delivers bleeding edge performance, the kind that is overkill when gaming at standard resolutions. Pair it with a fancier monitor though, and you'll have something that will serve you now and well into the future.

**John Gillooly**

## 3D SPEED

GOOD PLAYABLE UNPLAYABLE

VERY HIGH SETTINGS	73FPS
HIGH SETTINGS	111FPS
MEDIUM SETTINGS	136FPS

## BENCHMARKS

3.4GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1

OVERALL	1.19
RESPONSIVENESS	0.93
MEDIA	1.36
MULTITASKING	1.27

PERFORMANCE  
FEATURES&DESIGN  
VALUE FOR MONEY



OVERALL







# ASUS TRANSFORMER BOOK T100

THANKS TO INTEL'S NEW ATOM CPU, THE TRANSFORMER BOOK T100 DELIVERS FULL WINDOWS 8.1 IN A TINY, AFFORDABLE PACKAGE – THE NETBOOK IS BACK

**PRICE** \$600  
**SUPPLIER** [www.asus.com.au](http://www.asus.com.au)

**W**e were sad to see the netbook sink into obscurity, so it was with pleasure that we unpacked Asus' latest low-cost Windows device, the Transformer Book T100. Just like its Android-powered namesakes, it partners a 10.1in tablet with a matching keyboard dock; the difference is that it has a quad-core Intel Atom processor and runs Windows 8.1. The big news, however, is that it costs only \$600.

If your memories of netbooks are of chubby, miniaturised laptops with

glacial performance, be assured – this Asus is nothing of the sort. In the flesh, the T100 isn't only surprisingly petite, it's even moderately attractive. The dark-grey plastics of the base are imprinted with a fake brushed-metal finish, and the tablet's glossy plastic lid mimics Asus' top-flight Zenbooks, with circular patterns spinning around the Asus logo.

The 10.1in tablet weighs only 550g and measures 11mm thick. While there isn't the premium-feeling build quality of the best Android tablets, or Apple's iPad Air, it isn't unforgivably low-rent. There's some give in the

plastic rear, but it's solid enough. Slot it back into the keyboard base and the two latches hold it firmly, only letting go once the release catch is pressed fully. Together, they weigh 1.07kg.

## BLAZING A TRAIL

The design isn't remarkable, but the hardware inside certainly is. It marks the debut of Intel's latest Atom platform, Bay Trail. This is big news, and perhaps the platform's biggest development since its inception.

At the heart of Bay Trail lies the new 22nm Silvermont microarchitecture. This introduces a quad-core design and out-of-order execution, as well





as support for USB 3, DDR3 RAM and 64-bit operating systems. Graphics performance promises to take a leap forwards, too, thanks to a cut-down Ivy Bridge-class GPU.

The T100 is powered by a mid-range Bay Trail CPU – the quad-core, 1.33GHz Atom Z3740 – which is capable of running at burst frequencies of up to 1.86GHz. Although the CPU supports up to 4GB of RAM, Asus has focused on keeping the T100 affordable – there's a basic 2GB of DDR3 RAM and 64GB of eMMC flash storage. It's worth noting that only 48GB of this is left free, however.

In everyday use, the new face of Intel's Atom brings as dramatic a transformation as you could hope for. Compared to our experiences of Windows 8 on the previous generation of Atom devices (Clover Trail), the Asus is a speed demon. Applications load far more energetically, web browsing is slick and smooth, and the overall experience remains impressively responsive, right up to the point where the limitations of the 2GB of RAM start to show.

### FULL SPEED AHEAD

In benchmark testing, the Asus left Clover Trail-powered rivals far behind. Where the 1.8GHz Atom Z2760 of Dell's Latitude 10 scored 0.22 in our Real World Benchmarks, the Asus racked up a result of 0.32, which is more than 45% faster.

The biggest improvement was in the Media element, which tests a device's ability to encode MP3 files, render HD video and edit image files in Photoshop. The dual-core, Hyper-Threaded CPU in the Dell scored 0.18; the Asus' quad-core CPU managed 0.35 – an improvement of 94%.

The increase in graphics performance is harder to gauge, since our Crysis benchmark didn't work at all on the previous generation Clover Trail hardware. In any case, the Asus exceeded expectations. With Crysis running in Low quality settings at its native resolution of 1366 x 768, the GPU managed an almost-playable average of 20fps; knocking the resolution down to 1280 x 720 was enough to buoy the average to 23fps. Set your sights on less demanding games, and modest resolution and detail settings, and the Asus will cope far better with PC games than you'd expect.

Battery life remains as good as on other Atom devices. In our light-use battery test – which dims the screen brightness to 75cd/m2, switches off Wi-Fi and scrolls through a

selection of web pages – the Asus lasted 9hrs 6mins. That doesn't come close to the Dell Latitude 10, which lasted 12hrs 35mins with its standard battery, but the Dell weighs a rather more portly 658g. Sadly, unlike Asus' Android Transformer tablets, the T100's keyboard dock doesn't sport a second battery – which really seems like a missed opportunity.

### LONG LIVE THE NETBOOK

For all its potential, it's reassuring that Bay Trail has materialised in such a sensibly designed device. For what it's intended to do – that is, deliver a workable halfway house between tablet and compact laptop – it's a cracking piece of kit.

As a tablet, we've no qualms with the T100 at all. The 10.1in display isn't stunningly good, but the 1366 x 768 resolution is ample for the screen size, and the IPS panel has wide viewing angles. Brightness tops out at a modest 240cd/m2, but the contrast ratio of 889:1 is excellent, and ensures images and movies look full of life. Colour reproduction isn't the match of pricier devices – skin tones look yellowish, and colours lack boldness – but this is a minor quibble.

Slotting the T100 into its keyboard dock brings back warm, fuzzy netbook memories. The Scrabble-tile keys are small, but there's a pleasing resistance to each keystroke, and while we'd prefer a wider right-Shift key, we could get used to the small one here.

The buttonless touchpad beneath is similarly miniaturised, but it works well and supports edge-swipes, pinch-to-zoom and two-fingered scrolling, as well as two-fingered taps to emulate right-clicks. We have one small complaint: clicking the pad is noisy, so you'll want to dab it unless you fancy enraging everyone in the vicinity.

Asus has included a fine range of features for the money. The tablet charges via the micro-USB connection, and there's also a micro-HDMI output, and a microSD slot for expanding the frugal 32GB of storage. In addition, there's dual-band 802.11n wireless, Bluetooth 4, a TPM2 security module and a 1.2-megapixel front-facing camera.

The dock adds a single USB 3 port, which is a most welcome addition. As a result, offloading files from the main 32GB system drive is painless.

By far the most attractive feature of the T100, however, is the bundled software. Somehow, Asus has found room in the budget to provide a full copy of Microsoft Office Home & Student 2013. For many, that will be



### KEY SPECS

Quad-core 1.33GHz Intel Atom Z3740 • 2GB DDR3 RAM • 64GB eMMC • 10.1in 1366 x 768 touchscreen • micro-HDMI • micro-USB • microSD • 3.5mm headset jack • 1 x USB 3 (on dock) • dual-band 802.11n Wi-Fi • Bluetooth 4 • Windows 8.1 32-bit • 1yr RTB warranty • 263 x 178 (171) x 24 (11)mm • 550g (tablet) • 1.07kg (tablet and dock)

enough to turn the Asus from being a highly tempting purchase into an absolutely essential one.

### VERDICT

While Microsoft is still trying to convince everyone that Windows RT devices are the spiritual successors to the netbook, Intel has made its feelings clear – ARM isn't welcome to a piece of the Windows action.

The new Atom platform delivers a dramatic performance increase – enough power for casual gaming – and the same great battery life, all at a price that has allowed Asus to sell the Transformer Book T100 for only \$600. In our opinion, this represents the death knell for Windows RT.

As for the T100 itself, it delivers everything you could ask for, and it's ludicrously affordable. Snap one up while you can – we predict these will sell out fast.

**Sasha Muller**

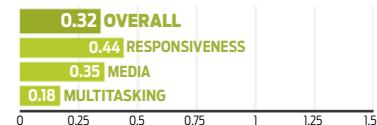
### 3D SPEED

GOOD PLAYABLE UNPLAYABLE

HIGH SETTINGS	20FPS
MEDIUM SETTINGS	7FPS
LOW SETTINGS	3FPS

### BENCHMARKS

3.4GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1



### BATTERY LIFE

HOURS:MINUTES

HEAVY USE	5:44
LIGHT USE	9:06

PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

# KATANA SENTINEL X SERIES

WE GET OUR FIRST LOOK AT A NEW SYSTEM BUILDER'S GAMING MACHINES, AND WE LIKE WHAT WE SEE

**PRICE** \$3690

**SUPPLIER** katanagamingssystems.com.au

It's a pretty hard to ignore truth that the most economical way to get a good, relatively cheap PC is to build it yourself. However, it can be a chore for some people, so it's great to have the option to buy a complete system that just works out of the box.

Katana Gaming Systems goes a little step extra with its systems, though, delivering a great machine that not only does just that, but is also packed with some great attention to detail.

The Sentinel X ships with a binder full of install CDs and all the documentation for each component in the build. The binder features a complete orientation guide to your new system, including boot-up instructions and a guide to installing Corsair LINK software for all the Corsair bits inside – Katana makes a big point of noting that it does not install anything not 100 per cent necessary, and that's something we can definitely get behind.

There's also a complete checklist of everything that's been checked on your new system before it was shipped, from cable connections and airflow to burn-in and IO tests. You get the name and signature of the person who built the system, making the entire process very personalised, and easy to track if something does – unlikely as it is – go wrong.

The large Raven RV-01 case is also festooned with little strips of masking

tape securing every panel that might come loose in transit. There's even stickers warning users to remove the internal packing from the case before powering up – since these are over the power buttons they're practically impossible to mix. They refer to the custom-cut foam padding that protects the SLI video cards from moving about in transit – a handy little addition.

Once all the packing is removed, the system powers up into a veritable stealthy beast, making the stealth bomber-inspired Raven case an almost perfect choice. Even with the side panel off for our testing, the Sentinel X barely made a noise. It's pretty much silent with the panel on.

And despite the lack of audible grunt, this really is a powerhouse machine. Two ASUS 280X cards make for a serious amount of pixel pushing power, and you're certainly not going to get much of a bottleneck from the 4770K processor and 16GB of Corsair RAM. And the rest of the Corsair parts – PSU and HYDRO cooling system mean you get gear that's engineered to work together, and with the aforementioned Corsair LINK software, which we'd recommend you install right away.

Everything is well-chosen – with an eye to not needing to upgrade for years – and neatly installed. The Raven turns the mobo plate 90 degrees to standard cases, meaning all mobo connections face out of the top of the case. This makes cable management a bit easier, and Katana's made sure everything is secured out of the way with cable ties.

Performance is pretty much what you would expect. There are very few things you can throw at this system that really challenge it, as our benchmarks suggest. But this is also the biggest weak point of the build.

There's a good argument to be made that packing two AMD cards into the system drives up the price, while delivering a multi-card solution that just isn't up to scratch with NVIDIA's. And the premium you end



## KEY SPECS

Silverstone RAVEN RV-01 • ASUS Maximus VI Hero • Intel Core i7-4770K • Corsair H100i HYDRO • Vengeance Pro DDR3 2133 16G • 256GB Samsung 840 PRO • Seagate Barracuda 2TB SATA3 HDD 7200rpm • 2x ASUS R9280X-DC2T-3GD5 • Pioneer Blu-ray SATA Writer • Corsair AX 860i Digital • Windows 8 64-bit.

up paying for that second card, and all the high-end componentry, does cost you. By comparison, TI's more modest build, which really isn't that much less powerful, comes with a monitor, keyboard, mouse, and stable OC – all for over \$1000 less.

There's no doubt that the Sentinel X is a great system. It's very well made and Katana do everything they can to make you feel looked after. But unless you must have a powerful multi-monitor setup, it's overkill. Very cool overkill, though, even we have to admit.

**David Hollingworth**

## 3D SPEED

GOOD PLAYABLE UNPLAYABLE

HIGH SETTINGS	103FPS
MEDIUM SETTINGS	129FPS
LOW SETTINGS	227FPS

## BENCHMARKS

3.4GHZ INTEL CORE I7-2600K, 4GB DDR3 = 1

OVERALL	0.15
RESPONSIVENESS	0.97
MEDIA	1.29
MULTITASKING	1.19

PERFORMANCE

FEATURES&DESIGN

VALUE FOR MONEY

OVERALL



# WD MY CLOUD

NOT QUITE A CLOUD, BUT STILL  
A VERY HANDY PERSONAL STORAGE DEVICE

**PRICE** \$249  
**SUPPLIER** [www.wdc.com](http://www.wdc.com)

It's more than a little disingenuous to call WD's latest storage product the 'My Cloud'. Touted as a "cloud of your own" in the marketing bumpf, it's really no different than many other internet accessible NAS devices we've reviewed in the past.

Which is not to say it's a bad product per se; we're just nitpickers when it comes to proper nomenclature, and this is very much *not* a cloud device. It is, however, very handy, and very good at what it does – offer you seamless access to all of your data wherever you are.

We tested the 3TB model, and you can get two and four terabyte versions depending on your storage needs. The My Cloud (grr) follows the usual WD book-like design, sitting upright and looking stylishly unobtrusive. The included setup instructions are simple, but the process itself is a little back and forth – the initial install hung indefinitely until we tried to access the My Cloud through the web interface, at which point a firmware update seemed to fix things up.

It's not an insurmountable problem, but it's annoying nonetheless.

On the flipside the setup utilises the My Cloud's power LED to let you know

what's going on, changing colour as it goes through each step, which is a handy little indicator.

The device comes with no software, but once downloaded from the WD support site, the My Cloud's easy to use. You can set up multiple users complete with passwords, and WD's dedicated backup software is both simple and relatively useful. Access to other storage services like Dropbox and SkyDrive is built in, making actual cloud sharing and storage very easy.

But the real power of the My Cloud is the ability to set up shares and access data remotely. You can log on via a web service, desktop application, or via a smartphone app, meaning that your own personal storage is never far away – assuming you're not going to be blasting any mobile data caps (though you can at least set a warning for this in the app, which is a welcome touch). But for sharing things like family photos, media collections around the house, or just having foolproof access to important documents wherever you are, the My Cloud is very useful, poor naming be damned. And, thanks to easy to navigate interfaces, it's pretty straightforward. Setting up the various apps on various devices, from work PCs to the machines of relatives and friends, makes for easy sharing – an important aspect if you're trying to share baby pics with the grandparents!



In fact, this is one of the more ingenious uses we've found for the My Cloud – my colleague John Gillooly has set up one at his parents' home, and with access to it he can now easily share all kinds of stuff with the family, and easily monitor the device on their behalf.

Ultimately, the My Cloud is more of an evolution in storage than the revolution that WD claims that it is, but that doesn't mean the My Cloud is any less handy. If you've yet to invest in networked attached storage devices this is an easy and affordable place to start. Just keep an eye out for the install issues we mentioned, and you'll be set up in no time.

**David Hollingworth**



PERFORMANCE  
FEATURES&DESIGN  
VALUE FOR MONEY



**OVERALL**





# ASUS ROG MARS 760

IT HAS BEEN A WHILE SINCE WE HAVE SEEN A MIDRANGE DUAL GPU CARD.

**PRICE** \$850

**SUPPLIER** [www.asus.com/au](http://www.asus.com/au)

If there is one thing that both impresses and annoys us about ASUS' Republic of Gamers brand, it's that it comes out with some pretty extravagant, high-end componentry. A lot of the signature products in the range have been kept out of the hands of mere mortals, and often the flagship products are produced in such limited numbers that the reality is they are more about winning marketing battles than they are about delivering a great product for end users.

It was this attitude that caused us to be so surprised when ASUS announced the MARS 760 graphics card. In the past Asus has released some dual GPU cards, but they have always fallen into the realm of extravagance, ones that come with a lot of nice design touches and often a plaque explaining just how limited a run the hardware was, a textbook example of a product that was never really designed for consumers.

However, with the MARS 760 ASUS is changing tack. This dual GPU monster shirks off the fastest products out there, instead focusing on a very affordable mid-range GeForce GTX 760 GPU from Nvidia.

What results is a card that bears a pricetag just shy of the flagship GeForce GTX 780 Ti, but still comes in cheaper. It is a truly curious bit of positioning, one that initially seems a bit odd until you realise the real purpose of the MARS 760 – to deliver excellent gaming at 1920 x 1080. While our personal tastes don't run to maximising what we consider to be a lower gaming resolution, it does have benefits for those who are comfortable with their monitors, and to those who are using something extravagant like a

120Hz model that maxes out at 1080p. It would also be a decent solution for TV gaming, although the actual size of the card may well cause problems for those wanting to cram it into a tiny chassis.

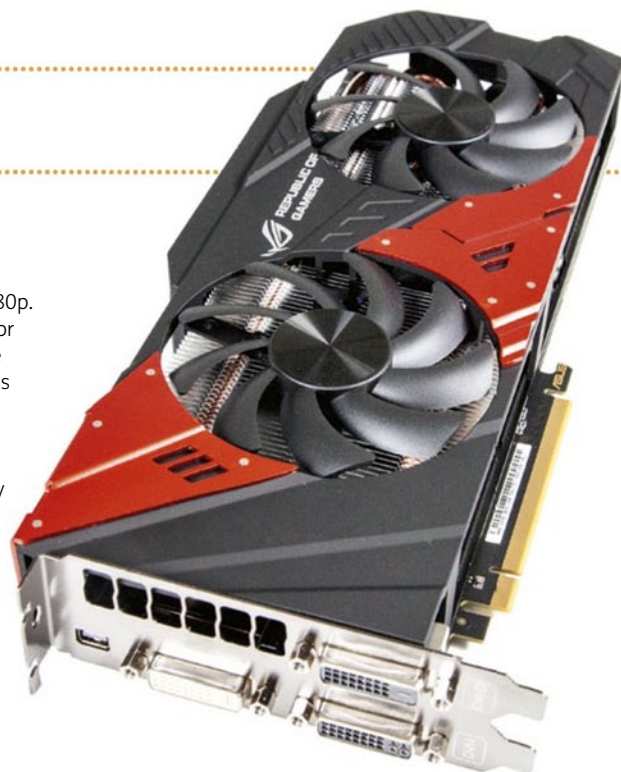
We say this because, even on our open testbench, we were constantly aware of how long this graphics card is. At 280mm in length the PCB is only a centimetre longer than that of a GeForce GTX 760 Ti, but it feels massive. You'll also just need to keep in mind that the lit MARS logo on the side of the card sticks up, making the overall height 110mm, but that shouldn't be an issue for most systems.

The card itself is a work of art, differing in design from the DCUII coolers that we are used to. The shroud is made of metal, with a soft-touch rubberised coating, accentuated by anodised red aluminium highlights. It also features a brushed aluminium backplate and a glowing red MARS logo, designed to be visible through a case window (there is still a modicum of bragging rights associated with the product).

It takes two eight-pin SATA power connectors, which drive the two GPUs and internal SLI connection. While the card technically has 4GB of GDDR5, the reality is that because you'll be running the GPUs in SLI, the full memory won't be available, and for all intents and purposes this is a 2GB card. That isn't a huge issue though – as long as you stick to 1080p then it should serve you for some time to come.

In terms of performance we saw excellent results at 1920 x 1080, with the card capable of handling anything we threw at it, with the levels pretty well cranked up to maximum. It coped amply with our standard Crysis test, still managing over 60fps at very high detail.

It also coped admirably with



## KEY SPECS

Dual GTX 760 GPUs • 4GB GDDR5

Crysis 3, only really stumbling when we submitted it to our torturous maximum resolution, maximum detail benchmark. In this the framerate dropped to 26fps, which will be ok for some but was just below the threshold of what we would consider to be smooth and enjoyable first person shooter experience.

We are still in two minds about the MARS 760. While it does exactly what ASUS set out to do, we do wonder just how much of a market there is for an \$850 graphics card that is targeted at 1080p gaming. If you really are that prepared to spend big on graphics, then a high-end single GPU and high resolution monitor would be a much better solution. What results is a card that suits a specific niche, and for that we have to give ASUS credit. It certainly isn't a card for us, but it could well be a card for you. Just make sure you go in with a full awareness of the strengths and weaknesses.

**John Gillooly**

## 3D SPEED

GOOD PLAYABLE UNPLAYABLE

VERY HIGH SETTINGS 65FPS

HIGH SETTINGS 82FPS

MEDIUM SETTINGS 100FPS

PERFORMANCE  
FEATURES&DESIGN  
VALUE FOR MONEY



**OVERALL**



# WD BLACK2 DUAL DRIVE

ONCE A DECADE WE FIND A PRODUCT THAT GETS US EXCITED ABOUT STORAGE AGAIN

**PRICE** \$399

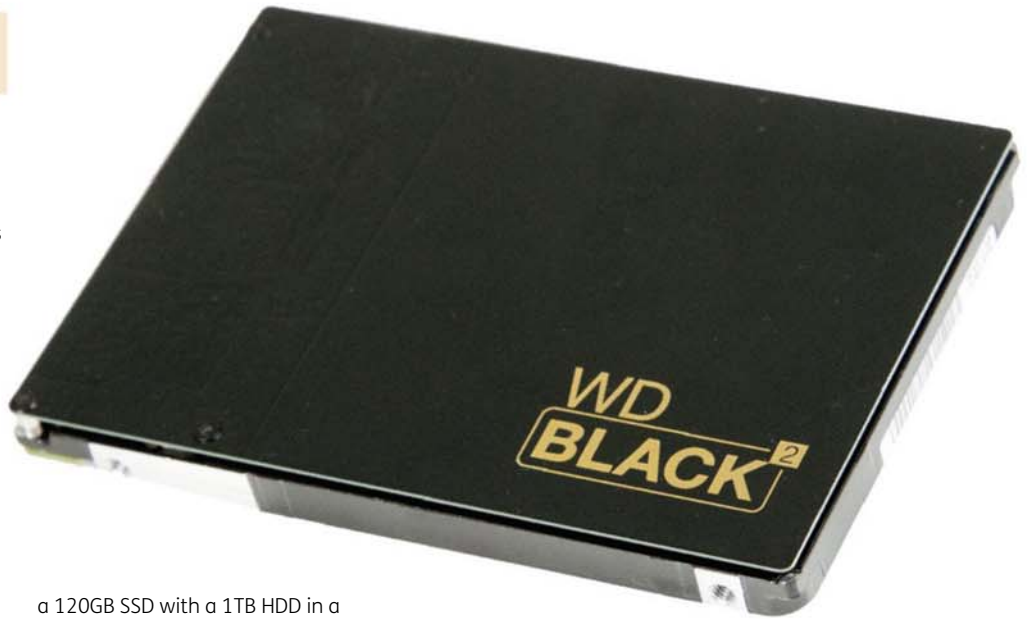
**SUPPLIER** [www.wdc.com](http://www.wdc.com)

It is pretty safe to say that we don't see a huge amount of consumer-facing innovation in the hard drive space. Most of the significant advancements over the past few years have revolved around fitting larger and larger capacities into smaller and smaller form factors.

This peaked midway through 2013, when both Seagate and WD announced new single-spindle drives, designed to fit into Ultrabook sized PCs. While these lacked the speeds seen with the standard low capacity SSDs found in such devices, they had the expansive storage that a lot of people find lacking when using an Ultrabook as a primary PC.

This lack of space is a major driver of storage, especially as development focused more and more on mobile. Oftentimes space means a trade-off between performance and capacity, and apart from the bulkier gaming laptops, most only have a single spot to install a 2.5in hard drive (assuming they aren't solely built around mSATA drives).

It is this kind of quandary that Western Digital's latest enthusiast drive is designed to tackle. The Black2 Dual drive started out life when WD was testing its hybrid drive solutions,



a 120GB SSD with a 1TB HDD in a single package. It sports a single SATA connector, and is designed for those who are comfortable with juggling files to take advantage of the two drives.

The drive itself comes in a beautifully designed package, containing not only the drive but also a SATA to USB adaptor and a cardboard USB key that, when loaded, takes you to WD's website so you can download software.

It works best with a fresh Windows install. When you do this you'll only see the SSD portion of the drive; however



on the small side for our liking (a 256GB option would be nice, but we understand that WD wants to start out small with this product). This, and the rather significant price tag, means that despite our initial fantasising about different uses for the drive, it is at its best value for money when being installed in a laptop with a spare 2.5in bay. This is where you'll get most bang for your buck, especially if you are moving from a mechanical drive. You'll see the speed boosts that come from the SSD, but you won't have to worry about where your bulk data lives. This, in and of itself, makes the WD Black2 Dual Drive a real standout product, one that makes a heck of a lot of sense.

If you don't have a laptop to upgrade, however, you'll probably struggle to see the value. Even Mini-ITX chassis now have ample room for a few SSDs and 3.5in drives, and they will prove much better bang for your buck than going with this integrated wonder.

**John Gillooly**

**“This is a 2.5in drive targeted firmly at enthusiasts, one that combines a 120GB SSD with a 1TB HDD in a single package”**

and has turned into quite a fascinating product. Hybrid drives have become more and more common in recent years, and use a small amount of flash memory in combination with caching algorithms to deliver performance somewhere between that of a mechanical drive and an SSD. But like most hybrids, this means a compromise, and WD found itself being asked why users couldn't just directly address the flash memory.

WD took this and ran with it, creating the WD Black2 Dual Drive. This is a 2.5in drive targeted firmly at enthusiasts, one that combines

once Windows is up and running, you can fire up the WD software and this exposes the mechanical drive as well. It is a one-time deal, and if you are so inclined you can even move Windows to the mechanical drive once the software is installed.

This process went smoothly, although we would have preferred WD to actually ship the software on the USB key rather than requiring a download. This is a relatively minor issue, however, and our installation was hassle free.

Performance was excellent, although the 120GB SSD is a little

PERFORMANCE  
FEATURES&DESIGN  
VALUE FOR MONEY



**OVERALL**





# GIGABYTE N78TGHZ-3GD

NVIDIA UNVEILS A LESS TITANIC TITAN

**PRICE** \$800

**SUPPLIER** [www.gigabyte.com.au](http://www.gigabyte.com.au)

**W**hen AMD launched its new high-end Radeon R9 290X GPU, we didn't expect to have to wait long until Nvidia retorted. After all, the very nature of the GPU market is one-upmanship, of delivering small batch, ultra fast and ultra expensive cards designed to capture the hearts and minds of gamers.

What we didn't expect was the GeForce GTX 780 Ti, a card that is essentially a Titan without some of the GPGPU specific features. While it comes burdened with a massive pricetag, it isn't as massive as Titan, and it is an excellent showpiece for Nvidia, even if it is targeted well above the vast majority of mere mortals.

The 780 Ti has 2880 shader processors to the Titan's 2688, but lacks the double precision floating point capabilities of Titan. Gamers won't notice the small differences



## KEY SPECS

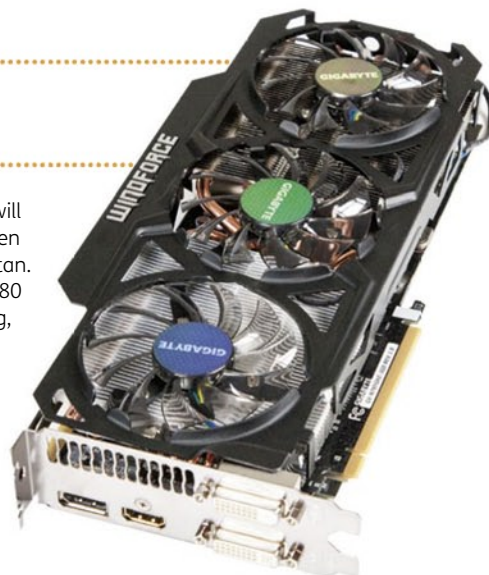
2880 CUDA cores •  
3GB GDDR5

between the two cards, but they will notice the huge savings made when going with a 780 Ti instead of a Titan.

Like most high-end cards, the 780 Ti will be wasted on 1080p gaming, especially a tweaked-up version like Gigabyte's special Gigahertz Edition card (which can boost to 1150MHz, up from the standard 928MHz). This is a card for 1920 x 1440, or to be used in SLI with a second card for 4K gaming.

Overall this Gigabyte card is an incredibly impressive unit, one capable of pumping out ridiculous image quality at decent framerates. It smashed through our standard Crysis test with 66fps at very high detail, and delivered a truly lovely experience in Crysis 3, where it ran with everything cranked to maximum at a very playable 34fps.

The only thing working against the GTX 780 Ti is the pricetag at the moment. While the R9 290X has settled somewhat, and can be found starting at \$650, the newer 780 Ti will set you back around \$800 at the time



of writing. If money is no option we'd go for the 780 Ti, hands down, but if you want to save the R9 290X remains a tempting balance of price and performance.

**John Gillooly**

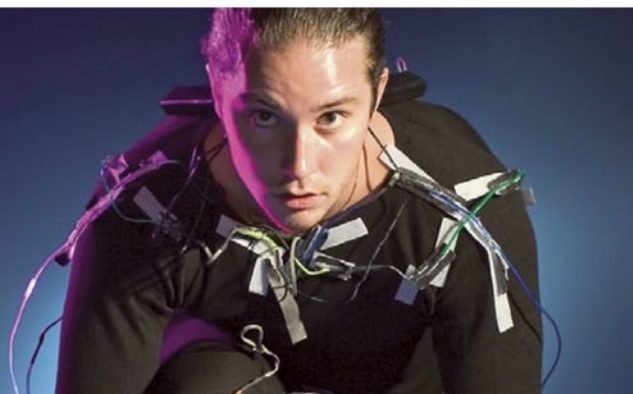
PERFORMANCE	★★★★★
FEATURES&DESIGN	★★★★★
VALUE FOR MONEY	★★★★☆
<b>OVERALL</b>	★★★★★

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GROUP OF EIGHT



# APPLE OS X 10.9: MAVERICKS

OS X BECOMES FRIENDLIER WITH IOS, BUT THERE ARE IMPROVEMENTS FOR DESKTOP USERS, TOO

**PRICE** Free  
**SUPPLIER** Mac App store

The latest version of OS X is the first to be named after a place – a surfing location in California – rather than a big cat. It's also the first to be offered as a free upgrade. That's a change that benefits almost every Mac user, since support for Mavericks stretches back to mid-2007 hardware, and installing it is as easy as clicking a button in the Mac App Store. The only catch is that you need at least 2GB of RAM and must be running Snow Leopard or later.

You may worry that installing a new OS on ageing hardware will cause things to slow to a halt. In fact, OS X has remained impressively nimble since Snow Leopard, and Mavericks should be faster still, thanks to a new memory-compression technique that reduces the system's reliance on virtual memory. Apple claims this delivers a 40% improvement in responsiveness compared to Mountain Lion on a MacBook Air; on our early-2008 iMac, Mavericks felt every bit as smooth and responsive as a new Mac.

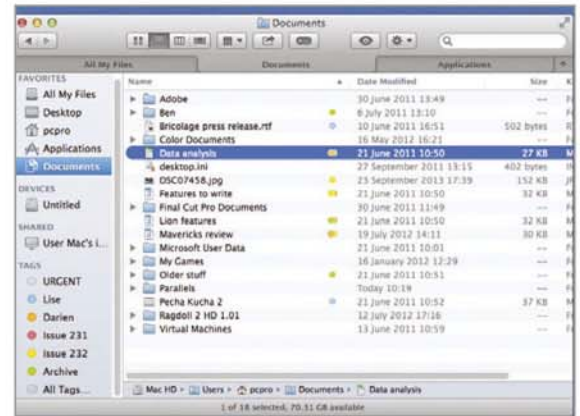
Mavericks also brings improved power-management features, including one – with the rather twee name of App Nap – that automatically throttles CPU usage for background applications. According to Apple's figures, this can reduce CPU power usage by up to 23%, promising improved battery life for MacBook Air and MacBook Pro laptops.

Mavericks comes with a few new apps that strengthen the relationship between the desktop and iOS devices. The first is a desktop version of iBooks. Texts on your iPad or iPhone automatically sync to the desktop, complete with highlights and notes, so you can easily refer to them while revising or writing, and citations are generated automatically. Even for casual reading, it's worth having: if your iPad battery is getting low, you can switch to your laptop and pick up where you left off.

One more enhancement that's worth mentioning is iCloud Keychain – an identity manager that stores your usernames, passwords and card details, and syncs them across authorised OS X and iOS devices. Unfortunately, it doesn't work in third-party browsers, nor in most third-party iOS apps, since support must be specifically plumbed into the code.

In addition to iOS integration, Mavericks brings enhancements to the traditional desktop. First, Finder windows can now contain multiple tabs, like a browser. This means you can easily hop back and forth between file system locations without filling your screen with windows. This makes for a simple but welcome improvement.

There's good news for multiple-display users, too: at long last, each display gets its own menu bar and Dock. By default, each screen is configured as a separate Space, allowing you to run a full-screen application on one screen while



▲ The familiar Finder has been upgraded with tabs and tags

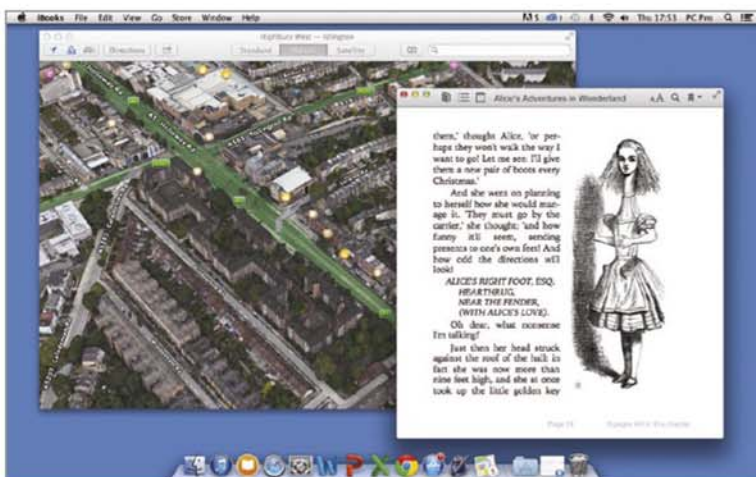


remaining in desktop mode on the other; if you prefer, you can switch to extended-desktop mode, enabling your windows to spill across displays. If you own an Apple TV, you can also use your television as a mirrored or secondary display.

A final update concerns the notifications framework. Safari for Mavericks introduces an API that (with your permission) enables online services to generate desktop notifications that work like system-level ones. Interactive notifications are also available: set a service to generate alerts rather than banners, and you can reply directly to messages and emails by clicking a button on the notification pop-up.

The naming theme and distribution model may be new, but Mavericks isn't a dramatic departure from what's gone before in terms of functionality. Although several of the new features reach out to iOS, there's nothing here that will require your existing desktop workflow to change, and we suspect most upgraders will be grateful for that. Even if the new apps and multiscreen enhancements don't appeal, it's easy enough to disable or ignore any you don't need; you'll still reap the benefits of running Apple's latest, best-supported OS. Considering it's free, installing Mavericks is a no-brainer for anyone who owns a Mac that's recent enough to run it.

**Darien Graham-Smith**



◀ The latest release of OS X brings the Maps and iBooks apps to the desktop

EASE OF USE  
FEATURES&DESIGN  
VALUE FOR MONEY



OVERALL







# GAME ON!



**REVIEWS**  
X Rebirth  
Battlefield 4  
Call of Duty: Ghosts  
XCOM: Enemy Within  
SimCity: Cities of Tomorrow  
Assassin's Creed 4: Black Flag  
Bioshock Infinite: Burial at Sea

A LINK BETWEEN  
WORLDS  
KILLZONE  
SHADOW FALL  
DEAD RISING 3  
RESOGUN  
FORZA 3  
KNACK  
RYSE

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# LABS BRIEFS

## ► SEAGATE 500GB SLIM PORTABLE DRIVE

**PRICE** \$99

**WEBSITE** [www.seagate.com.au](http://www.seagate.com.au)

**H**igh capacity storage has been on a long curve to near ubiquity for years now, getting smaller and cheaper while also becoming a vital part of our digital lives. Which is what makes Seagate's Slim Portable Drives so great – small enough to tuck in a pocket, fast enough for your everyday needs, and remarkably reliable – even as a pure drive it's already become a part of our daily digital existence. But with the included software you can set up easy backups and share photos. It's also stylish enough that it won't look out of place beside a brushed metal ultrabook or Macbook, which is something we always appreciate, at least. For the price, this is a great little device.

**David Hollingworth**



**OVERALL**



## ► POWERSHIELD SAFEGUARD 750VA

**PRICE** \$120

**WEBSITE** [www.powershield.com.au](http://www.powershield.com.au)

**N**ot everyone really needs a high-end, practically commercial-grade UPS. At least, you don't need one until you have your first major power-outage and either lose equipment, important data, or – possibly worst of all – your saved game.

Seriously, that's important!

And the solution is Powershield's SafeGuard 750VA, a UPS that you will hopefully never discover works really quite well. Capable of holding enough of a charge to keep a PC going for at least ten minutes, it also boasts overload protection, microprocessor control, protection for your networking gear as well. Though we're loath to actually short power in our Labs, it certainly holds the necessary charge, and unsurprisingly is easy to use. The design is also quite unobtrusive, and will fit nicely under any desk.

**David Hollingworth**



**OVERALL**



## ► CORSAIR CS650M

**PRICE** TBA

**WEBSITE** [www.corsair.com](http://www.corsair.com)

**O**ne of the central truths to the PC industry is that no matter how much focus is put on the high end, the mid to low-range products are the ones that generate the money that keeps companies alive. Corsair has been king of starting out with enthusiast products, and following with more reasonably priced models.

The CS650M is such a product. We don't have a price just yet, but going on overseas pricing it is slightly cheaper than the recently released RM650 PSU. For this you get a supply with 80 Plus Gold efficiency, with a semi-modular design that should keep you from needless cable tangles, in a reasonably priced build. As always with PSUs, the ultimate value of the CS650M is going to be heavily linked to the eventual retail price; as long as that isn't too high, this is a very competent supply for those with average needs. If it's close in cost to the RM650, then we would go for the higher-end model.

**John Gillooly**



**OVERALL**



## ► TURTLE BEACH EARFORCE PX4

**PRICE** \$200

**WEBSITE** [turtlebeach.com](http://turtlebeach.com)

**T**urtle Beach is pitching the PX4 as the first set of wireless gaming headphones to support the PS4, which in and of itself will have some people sold.

The first main part of this headset is a wireless transmitter that hooks into an optical or analog audio out, and uses a USB port for power. This then connects via dual band wireless to the headset itself, which supports simulated Dolby surround sound. It can also connect to bluetooth devices like your smartphone, or via an analog cable, and is charged by USB.

This all works alright, and the audio quality is decent, if a little underwhelming when compared to cheaper solutions like Plantronics Rig, which lacks the wireless functions but has more comprehensive connectivity. Unless you absolutely need something better than the default PS4 headset, then these fall just short of greatness.

**John Gillooly**



**OVERALL**





# Big Screen Tablets

THERE'S MORE CHOICE THAN EVER BEFORE IN THE FULL-SIZED TABLET MARKET, WITH WINDOWS JOINING IOS AND ANDROID IN THE BATTLE FOR CONSUMERS' CASH. WE'VE PICKED 14 OF THE LATEST, GREATEST DEVICES AND TESTED PERFORMANCE, USABILITY AND BATTERY LIFE TO FIND OUT WHICH IS BEST

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**INSIDE/OUT**

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Dual Fan Maximum Airflow & Cooling

\* DEPENDING ON MODEL, KINDLY CHECK : [www.xfxforce.com](http://www.xfxforce.com)



FOR INQUIRIES, PLEASE CONTACT : [sales@pinegroup.com](mailto:sales@pinegroup.com)

# Buyer's guide

**M**uch has changed since we last looked at full-sized tablets more than a year ago. Back then, the compact-tablet market was in its infancy, and there wasn't much choice: it was either Android or iOS, and we had to include smaller tablets to keep up the numbers.

This time around, there's far more variety, with Windows 8 joining Android and iOS, and products of different shapes and sizes fleshing out the ranks. This Labs features tablets with screen sizes of roughly 10.6in, although actual tablet size varies, and many have keyboard cases and other accessories included as standard.

So, where on earth do you start when it comes to deciding how to spend your cash? The screen is as good a place as any. It's still the most important aspect of any tablet, and should be a prime consideration in your choice.

However, don't just look at the specifications. A lot of the time higher doesn't mean better. For example, once you get past 1920 x 1080, there isn't much between one display and another, at least in terms of sharpness and detail reproduction.

High brightness and good colour reproduction are just as important, if not more so – you'll find analysis in the reviews and figures in the graphs at the end of this Labs (see p68) to help you make your decision.

It's also worth considering tablets with support for active styluses, such as the Dell Latitude 10 and the Samsung Galaxy Note 10.1. These bring an extra dimension to tablet use, adding pressure sensitivity for painting and drawing, and improving accuracy for note-taking and handwriting recognition.

Performance issues remain a problem – especially for cheaper Android tablets, which still slow down if you ask them to do too much. However, battery life is less of a critical issue these days. Only four tablets featured this month lasted fewer than nine hours in our tests, which is impressive.

The question of questions, though, is which operating system to opt for, with Windows 8



and RT devices to choose from, alongside Apple's iPad and Android tablets.

Each platform has strengths and weaknesses, but it's the apps rather than just the hardware that should determine your final decision. Make sure you're happy that the tablet you purchase covers all your software needs before you commit to buying.

## HOW WE TEST

### PERFORMANCE

This month's Labs is unusual, in that we're pitching full-blown x86-based Windows 8 devices against lighter-weight, ARM-based hardware. This means that, although we can run our Real World Benchmarks on some tablets, the figures aren't of much use as a comparative tool, since they can't be run on the rest. Instead, we've focused on results provided by our usual mobile benchmarks, since these work across all three operating systems.

We use Geekbench 2 to provide a measure of CPU performance, and the GFXBench T-Rex HD (onscreen) test allows us to measure how the tablets cope with ultra-demanding games. We also run SunSpider and Peacekeeper to show how the devices perform when browsing the internet and running web applications. We combine the results of these tests with our own subjective experiences of how responsive the tablets feel in use to give an overall score out of six for Performance.

### DISPLAY, BATTERY LIFE AND FEATURES

To provide an accurate representation of the quality of our tablets' displays, we measure them with an X-Rite i1Display 2 colorimeter. This gives us the contrast

ratio and a figure in candela per square metre (cd/m<sup>2</sup>) for brightness.

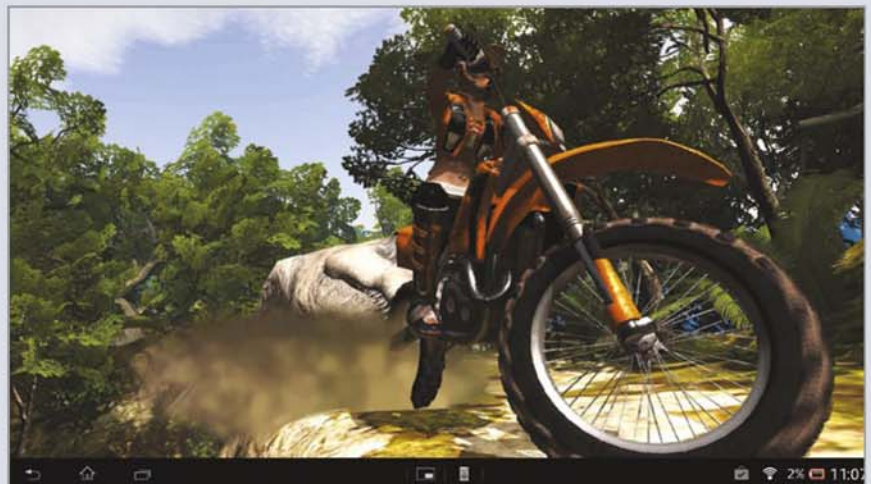
To gauge battery life, we loop a low-resolution video with Wi-Fi off and the screen set as close to 120cd/m<sup>2</sup> as the hardware allows, timing how long each tablet takes to run out of power.

We also consider each tablet's other features, such as connectivity, GPS, memory-expansion provision and whether or not

the tablet has cameras. We pay particular attention to the quality of apps and app stores when scoring for Features & Design.

### VALUE FOR MONEY

For the Value for Money score, we take into account the price of the most basic – the cheapest – model available and combine this with the other ratings to give a score out of six.



▲ We use the GFXBench T-Rex HD (onscreen) test to assess how each tablet handles the most demanding modern games



# GROUP TEST BIG SCREEN TABLETS



	Acer Aspire P3	LABS WINNER iPad Air	Asus Memo Pad FHD 10	Asus VivoTab Smart	RECOMMENDED Dell Latitude 10
Overall	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Performance	★★★★★	★★★★★	★★★★☆	★★★★☆	★★★★☆
Battery Life	★★★☆☆	★★★★☆	★★★★☆	★★★★★	★★★★★
Features & Design	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Value for Money	★★★★☆	★★★★☆	★★★★★	★★★☆☆	★★★★☆
INFORMATION					
Price	120GB, \$999	WiFi 16GB, \$598; 32GB \$699; 64GB \$799; 128GB \$899 WiFi + Cellular 16GB \$749; 32GB \$849; 32GB \$949; 128GB \$1049	32GB, \$400	64GB, \$450	64GB with two-cell battery, \$899; 64GB with four-cell battery, \$920
Manufacturer	www.acer.com.au	www.apple.com/au	www.asus.com/au	www.asus.com/au	www.dell.com.au
Dimensions (WDH)	295 x 11 x 191mm	170 x 7.5 x 240mm	264 x 9.3 x 182mm	255 x 10 x 171mm	274 x 15.9 x 176mm
Weight (with PSU)	790g (1.34kg with keyboard)	469g (478g for WiFi + Cellular)	566g	620g (1kg with keyboard)	760g (912g with 4-cell battery)
SERVICE & SUPPORT					
Warranty	1yr RTB	1yr RTB	1yr RTB	1yr RTB	1yr C&R
CORE COMPONENTS					
Processor	1.4GHz dual-core Intel Core i3-3229Y	1.4GHz dual-core Apple A7	1.6GHz dual-core Intel Atom Z2560	1.8GHz dual-core Intel Atom Z2760	1.8GHz dual-core Intel Atom Z2760
RAM	4GB	1GB	2GB	2GB	2GB
Storage	120GB SSD	16GB and up	32GB	64GB	64/128GB
Battery capacity	5280mAh	8820mAh	5000mAh	6760mAh	3880mAh (four-cell: 7760mAh)
Accelerometer	✓	✓	✓	✓	✓
Light sensor	✗	✓	✓	✓	✓
GPS/satnav	✗	✓	✓	✓	✓
NFC	✗	✗	✗	✓	✓
3G option	✗	✓	✗	✗	✓
DISPLAY					
Type	IPS	IPS	IPS	IPS	IPS
Size	11.6in	9.7in	10.1in	10.1in	10.1in
Resolution	1366 x 768	2048 x 1536	1920 x 1080	1366 x 768	1366 x 768
Pixel density	135ppi	264ppi	218ppi	155ppi	155ppi
Digitiser/active stylus support	✗	✗	✗	✗	✓ (stylus optional)
Video outputs	micro-HDMI	Adapters sold separately	micro-HDMI	micro-HDMI	mini-HDMI
CAMERA					
Rear camera resolution	5MP	5MP	5MP	8MP	8MP
Focus type	Fixed	Auto	Auto	Auto	Auto
Built-in flash type	N/A	N/A	N/A	LED	LED
Front-facing camera	✓	✓	✓	✓	✓
Front-facing camera resolution	0.3MP	1.2MP	1.3MP	2MP	2MP
Maximum video recording resolution	1080p	1080p	1080p	1080p	1080p
PORTS & CONNECTIONS					
Wi-Fi	Dual-band 802.11abgn	Dual-band 802.11abgn	Dual-band 802.11abgn	Single-band 802.11bgn	Dual-band 802.11abgn
Bluetooth	✓	✓	✓	✓	✓
Memory card reader	✗	✗	✓	✓	✓
Ports	USB 3	Lightning	micro-USB	micro-USB	micro-USB
SOFTWARE & ACCESSORIES					
Operating system	Windows 8 64-bit	iOS 7	Android 4.2.2	Windows 8 32-bit	Windows 8 32-bit
App and media stores	Windows Store	iTunes Store	Google Play	Windows Store	Windows Store
Accessories	AC power adapter	AC power adapter, USB to Lightning cable	AC power adapter, USB cable	AC power adapter, USB cable	Carry case, dock, stylus
BENCHMARK SCORES					
SunSpider	291ms	391ms	1,186ms	675ms	761ms
Geekbench 2	3170	2382	1173	1323	1412
GFXBench T-Rex HD (onscreen)	31fps	21fps	6.8fps	3.7fps	4.9fps
Peacekeeper	1,040	N/A	563	426	438



	Lenovo IdeaTab S6000	Microsoft Surface 2	RECOMMENDED Nexus 10	Samsung Galaxy Note 10.1	RECOMMENDED Sony Xperia Tablet Z
	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
	16GB, \$299	32GB, \$529; 64GB \$639	16GB, \$469; 32GB, \$569	16GB, \$500	16GB, \$500; 32GB, \$580
	www.lenovo.com.au	www.microsoft.com	www.google.com	www.samsung.com.au	www.sony.com.au
	259 x 9 x 180mm	275 x 8.9 x 173mm	264 x 9.2 x 178mm	262 x 8.9 x 180mm	266 x 6.9 x 172mm
	562g	675g	603g	600g	467g
	1yr RTB	1yr RTB	1yr RTB	1yr RTB	1yr RTB
	1.2GHz quad-core MediaTek MT8125	Nvidia Tegra 4	1.7GHz dual-core ARM Cortex-A15	1.4GHz quad-core ARM Cortex-A9	1.5GHz quad-core Snapdragon S4 Pro
	1GB	2GB	2GB	2GB	2GB
	16GB	16/32GB	16/32GB	16/32/64GB	16GB
	6300mAh	Not disclosed	9000mAh	7000mAh	6000mAh
	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓
	✗	✗	✓	✓	✓
	✗	✗	✓	✗	✓
	✗	✗	✗	✓	✗
	IPS	IPS	IPS	PLS	TFT
	10.1in	10.6in	10.1in	10.1in	10.1in
	1280 x 800	1920 x 1080	2560 x 1600	1280 x 800	1920 x 1080
	149ppi	206ppi	299ppi	149ppi	218ppi
	✗	✗	✗	✓ (stylus included)	✗
	micro-HDMI	micro-HDMI	micro-HDMI	HDMI (via optional adapter)	micro-HDMI
	5MP	5.0MP	5MP	5MP	8.1MP
	Auto	Fixed	Auto	Auto	Auto
	N/A	N/A	LED	LED	N/A
	✓	✓	✓	✓	✓
	0.3MB	3.5MP	1.9MP	1.9MP	2.2MP
	720p	1080p	1080p	720p	1080p
	Single-band 802.11bgn	Dual-band 802.11abgn	Dual-band 802.11abgn	Dual-band 802.11abgn	Dual-band 802.11abgn
	✓	✓	✓	✓	✓
	✓	✓	✗	✓	✓
	micro-USB	USB 3	micro-USB	Proprietary	micro-USB
	Android 4.2	Windows RT 8.1	Android 4.3	Android 4.1	Android 4.1.2
	Google Play	Windows Store	Google Play	Google Play	Google Play
	AC power adapter, USB cable	AC power adapter	AC power adapter, USB cable	AC power adapter, USB cable	AC power adapter, USB cable
	1,529ms	390ms	754ms	1,348ms	1,321ms
	1333	N/A	2464	1756	2196
	4.8fps	N/A	7.5fps	5.7fps	12fps
	560	N/A	1,057	597	480





Photography: Intro, Danny Bird; cutouts, Hugh Threlfall

# APPLE IPAD AIR

THE IPAD AIR IMPROVES ON ITS PREDECESSOR IN EVERY RESPECT, REPLACING IT AT THE TOP OF THE A-LIST

**PRICE** From \$598

**SUPPLIER** [www.apple.com/au](http://www.apple.com/au)

It took Apple CEO Tim Cook a long time to get around to the iPad Air at the company's autumn launch event. After rattling through a set that covered OS X Mavericks (the new, free update to the Mac OS – see p51) and the free versions of the iLife and iWork suites, he finally got to the meat of the presentation: a pair of new iPads, the first of which we have on review here.

Aside from the name, the major change with the latest iPad concerns its design. The full-sized 9.7in iPad is now a dead ringer for its little brother, the iPad mini: it has the same chamfered metal edges around the glass front; at the rear, those edges are more aggressively rounded than

on the previous iPad; and discrete volume buttons have replaced the rocker switch of old. It's a marginally more attractive device, especially in the moody Space Grey livery (it also comes in white and silver), but there isn't much in it.

The headline is the reduced weight and size of the device. At 469g, the Wi-Fi iPad Air is 28% lighter than the equivalent fourth-generation iPad, and it's thinner and narrower across its waist. If you hold each in succession, you'll notice the difference immediately.

In isolation, this reduction in weight is less noticeable, but the slightly more compact dimensions make a material difference to the way you handle the Air. It's now possible for people with large hands to stretch their fingers

across the back and grip the iPad in one hand. This isn't something we'd recommend you do for any length of time, but it gives you an extra option.

For the most part, however, you'll grip it by the edge, with a thumb resting on the narrower bezel. This isn't as much of a bind as you'd think: while reading a book in the Kindle app, for instance, you can rest a thumb in the margin without flipping the page, and in the browser we didn't find ourselves accidentally activating links, either. In our time with the tablet so far, the Air's narrow bezels haven't proved a problem.

## BATTERY LIFE AND PERFORMANCE

The real danger in reducing both the volume and weight of the iPad is reduced battery life. In fact, to achieve the new design, Apple has reduced the size of the battery by 24%, from a huge 42.5Wh to 32.4Wh. Remarkably, this hasn't had a negative impact. In our looping video test, with the screen calibrated to a brightness of 120cd/m<sup>2</sup> and flight mode activated, the

Air lasted 12hrs 55mins – 43 minutes more than its predecessor.

Effectively, the Air is a much more efficient tablet. According to Apple, this is due in part to the low-power M7 processor, which takes over the role of handling data from the tablet's various motion sensors (the accelerometer, the gyroscope and the compass).

A pleasant side effect of having a smaller battery is that the iPad Air takes less time to charge. Using the supplied AC adapter, the Air charged from 0% to 100% in around four hours. In the same time span, the iPad 4 hit only 80%. This may be a result of the more powerful charger, however: the adapter bundled with the Air delivers DC current at 2.4A, compared to the 2A of the previous one.

Performance, too, has seen a significant boost, with the Air now featuring the same dual-core, 64-bit, 1.4GHz A7 CPU as the iPhone 5s. In every benchmark we ran, this helped the iPad Air gain a significant lead on the fourth-gen iPad, which itself was no slouch. It's also faster than every Android tablet we've tested.

In real-world terms, that means swift load times for apps, slick menu and web-page scrolling, and sumptuous graphics in games. In *Asphalt 8: Airborne* – one of the most demanding games around – there's a slightly smoother frame rate than on the fourth-generation iPad, and the particle effects and high-resolution textures are stunning.

### DISPLAY, CAMERAS, AUDIO AND WIRELESS

The component that hasn't seen any change is the display, which is an IPS

unit with a resolution of 1536 x 2048 and a pixel density of 264ppi. We measured the maximum brightness at 410cd/m<sup>2</sup> and the contrast ratio at 1000:1.

Eyeballing it next to the previous model, it looks identical, with rich colours and an ever-so-slightly compressed dark end to the colour spectrum.

The cameras are similar in resolution to the previous iPad. The rear snapper is a 5-megapixel model, capable of capturing 1080p video, and the front-facing unit takes 1.2-megapixel shots and 720p video. There's one small difference to note, however: the front camera has a larger sensor, and thus larger pixels, which results in less noisy video and self-portraits. We're talking a minor improvement here, though.

On the audio side of things, there's a bigger change: the single, rear-firing speaker has been replaced with stereo speakers that sit along the bottom edge. Both volume and quality have improved, with the Air's drivers generating a slightly more full-bodied sound.

The final update, which is another marginal but worthwhile one, is a bump to the tablet's wireless capabilities. The move from a single internal antenna to two boosts the theoretical speed over 2.4GHz and 5GHz connections from 150Mbps/sec to 300Mbps/sec.

In the real world, you won't notice much difference, certainly not for internet connections and downloads, since your broadband speed will most likely prove the bottleneck. We measured the two iPads using [www.](http://www.)



[speedtest.net](http://speedtest.net), and at up to 20m away from the router across an open-plan office, each iPad gave the same download speeds – around 30Mbps/sec in all locations. Removing the broadband bottleneck and testing pure wireless speed resulted in a notable advantage in favour of the iPad Air, however: it achieved a peak transfer rate of 116Mbps/sec, with the fourth-generation iPad achieving 69Mbps/sec.

### VERDICT

With Apple now throwing in free copies of the iWork and iLife suites – incorporating Pages, Numbers, Keynote, GarageBand, iPhoto and iMovie – not only is the Air the best iPad in terms of hardware, it's also the best value.

It's thinner, lighter and more powerful than before, yet it retains a decent level of battery life. It charges more quickly, its Wi-Fi is faster, it has better speakers and an improved front camera – plus the Retina display is as good as ever.

There's no Touch ID fingerprint reader, which we expected to make the journey over from the iPhone 5s, and Apple remains stubborn in its refusal to allow owners to add extra storage via microSD. However, for the most part, the iPad Air is a triumph.

Considering that the fourth-generation iPad – with the backing of the App Store and its huge selection of tablet-specific apps – was our favourite tablet before this upgraded version came along, there's only one thing left to do: place the iPad Air at the top of our A-List tablet category. While there are some decent competitors, it's the best tablet around.



PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	<b>★★★★★</b>





## ASUS MEMO PAD FHD 10

ASUS DELIVERS ANOTHER GOOD-VALUE TABLET, BUT IT'S OUTGUNNED BY THE NEXUS 10 IN THE PERFORMANCE STAKES

**PRICE** \$400  
**SUPPLIER** [www.asus.com/au](http://www.asus.com/au)

Asus has been putting out some great Android tablets lately, with the compact, low-cost Fonepad and Memo Pad HD 7 hitting all the right notes. Now it's the turn of the larger screened Asus Memo Pad FHD 10 to take centre stage.

From the name, it's clear what the headline feature is: a Full HD, 10.1in IPS display. In a tablet costing \$400, that isn't bad at all. Quality is decent, too. Although the top brightness of 325cd/m2 isn't as high as the very best tablets in this month's review, contrast hits a solid 1016:1, and Full HD at this screen size is sufficiently sharp. In fact, as long as you hold the tablet 41cm or further from your eyes, you won't be able to tell the difference between the FHD 10's display and even the highest-resolution display.

At this price, the Asus is in competition with the Nexus 10, but it

**BATTERY LIFE:** 9hrs 36mins



isn't far behind. In fact, in some ways, we prefer it to the Google tablet. For a start, it's lighter, which makes it noticeably more comfortable to hold for extended periods. We also prefer the slightly softer, dimpled-plastic finish of the FHD 10 to the Nexus 10's grippy plastic. It feels more pleasant under the finger.

A quick glance around the edges reveals a superior selection of ports, too. There's a micro-HDMI output for connecting it to your TV and a microSD slot for expanding the tablet's already generous 32GB of storage.

When it comes to performance, however, this Asus tablet starts to fall behind. Powering the FHD 10 is a dual-core, Hyper-Threaded, 1.6GHz Intel Atom CPU, backed up by 2GB of RAM. Combined with Android 4.2.2 this delivers mixed results. Navigating even hefty web pages feels smooth and slick, as does moving around the operating system. However, we were perturbed to discover that, even on such a modern tablet, there was a degree of typing lag from the proprietary onscreen keyboard. Not even replacing this with SwiftKey – our favourite alternative – remedied the situation.

- 1 A Full HD display is all you really need on a 10.1in tablet
- 2 The rear panel boasts a pleasantly soft, dimpled finish
- 3 There's a good selection of ports, including a microSD slot

Benchmarking and informal games tests also revealed a lack of oomph compared to the best tablets on test. In Geekbench 2 and SunSpider, results were below average. Gaming was better, with the highly intensive GFXBench T-Rex HD test returning a frame rate of 6.8fps; this was backed up by smooth gameplay in Real Racing 3 and other demanding titles.

However, there's a caveat to all this. Since the Intel processor is x86-based, rather than ARM-based, it won't run every app and game available on Google Play.

With similar battery life and camera quality to the Nexus 10, it's difficult to separate the FHD 10. The Asus has more storage, a slot for expanding it and a more pleasing all-round design; the Nexus 10 has a better display, quicker performance, and boasts the most up-to-date version of Android. If it were our money, we'd choose the Nexus 10, but the FHD 10 has much to recommend it.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★



# NEXUS 10

A YEAR ON, THE NEXUS 10 IS STILL A CLASS ACT – IT'S FAST, THE DISPLAY IS AMAZING AND THE PRICE IS RIGHT

**PRICE** \$469  
**SUPPLIER** [www.google.com](http://www.google.com)

**T**he Nexus 10 has been around for a year, but you wouldn't know it from a quick glance at its specifications. It was a groundbreaking tablet when it first appeared, sporting the highest pixel count of any tablet display, and no other manufacturer has matched its Retina-beating resolution of 2560 x 1600 since then. It's a screen that delivers the highest pixel density in this Labs – 299ppi – which means you'd have to hold the tablet closer than 30cm from your eyes before being able to discern any kind of pixel structure.

It isn't only about resolution, though. In our tests, the Nexus 10's display was near the top of the performance tables, with a maximum brightness of 431cd/m2 and a contrast ratio of 980:1. Colours are rich and balanced, with high-resolution images

**BATTERY LIFE: 9HRS 25MINS**



and video bursting with detail. And what's most appealing about the Nexus 10's screen is its ability to reveal the subtleties in the shadows and highlights that many other tablets crush into black and white.

You might think that having to draw so many pixels would result in sluggish performance, but this isn't the case. With the latest version of Android – 4.4 – onboard, the Nexus 10 feels slick, and barely ever suffers from the slowdown that affects cheaper Android tablets. This is best illustrated by the complete absence of typing lag when using the onscreen keyboard. We also really like the light buzz the tablet gives on every keypress.

Examine the Nexus 10's benchmark results and you can see that, despite being a year old, the internals hold up well under scrutiny. It might only be a dual-core device, but in every test we carried out, Google's tablet was at or near the top of the tree, and in a Labs featuring full-blown Windows 8 devices, that's quite an achievement.

Its weakest test score was in the GFXBench T-Rex HD benchmark. This is the most intensive test we run, and it indicates how capable a tablet is when it comes to gaming, but even

- 1 This tablet's 2,560 x 1,600 display is the sharpest around
- 2 The Nexus 10's tacky plastic back is very grippy
- 3 The biggest disappointment is that there's no microSD slot

here its score of 7.5fps makes it the second-fastest Android tablet on test. And in real-world use, even the most demanding titles – from Real Racing 3 and Asphalt 8: Airborne to Despicable Me: Minion Rush – proved perfectly playable.

The Nexus 10's closest competitor is the Sony Xperia Tablet Z, which has a lower-resolution, 1080p display, comparable brightness and quicker performance in games. Sony's tablet also has a microSD slot – unlike the Nexus 10 – and is water-resistant. We prefer the design of the Tablet Z, too: it's much lighter than the Nexus 10 – the 603g heft of which feels rather unwieldy in comparison – and has far superior battery life.

In the end, though, it's impossible to separate the two tablets. The Xperia Tablet Z has marginally the superior hardware, and expandable storage is a plus, but the Nexus is almost as good and \$30 cheaper. We'd be happy owning either of them.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★





## SONY XPERIA TABLET Z

A SUPERBLY ACCOMPLISHED ANDROID TABLET – ONLY ITS HIGH PRICE KEEPS IT FROM THE TOP SPOT

**PRICE** \$500 (16GB)  
**SUPPLIER** [www.sony.com.au](http://www.sony.com.au)

For a long time this year, it seemed no manufacturer fancied its chances against the might of Apple and Google in the 10in tablet market. Eventually, however, Sony unveiled a challenger: the Xperia Tablet Z. We're glad it did, too, because it's a fantastic Android tablet.

The first thing you notice is just how light and slim it is. Even the iPad feels lumpen next to this lightweight marvel, and yet it isn't insubstantial. It gives a little if you twist it, but there's no creaking or crunching, and it's water- and dust-resistant, too.

Every port around the edges of the Tablet Z is sealed by a flap, giving it a robustness that no other consumer tablet can match. This is a device you can take on a camping holiday without worrying about the Aussie weather.

It's also at home on the sofa. An infrared transmitter set into the top

**BATTERY LIFE: 12HRS 26MINS**



edge of the tablet allows it to be used as a universal remote control, and since this capability is baked into the OS, you can pop up a floating remote app window at any time by tapping an icon at the bottom of the screen.

Speaking of the display, the 1920 x 1080 resolution is excellent. It can't match the Nexus 10 – its pixel density is 27% lower – but there isn't much to choose between them in the real world. If you look closely, you can see a slight grain to images on the Sony where there's none on the Nexus, but this isn't really a problem. The display performed well in our other tests.

The Tablet Z's maximum brightness reached 429cd/m2, and we measured a contrast ratio of 715:1. Pleasingly, colours were even more saturated and vivid than on the Nexus 10, although this comes at the expense of highlight and shadow detail.

The Sony's strength is its performance. A potent 1.5GHz quad-core Snapdragon S4 Pro CPU delivered flawless responsiveness in and around the operating system. Apps fired up without delay, there was no typing lag and web browsing was silky smooth.

It impressed again in the benchmarks, particularly the intensive

GFXBench T-Rex HD test, which returned a score of 12fps, the best of any Android tablet this month and just behind Apple's iPad Air. This turn of speed doesn't unduly affect battery life, either. In our new battery tests – in which we calibrate the display to 120cd/m2, dimmer than the half-brightness of the previous test – the Tablet Z lasted 12hrs 26mins, right up there with the best on the market. Only the 8.1-megapixel camera disappoints, with heavy-handed compression spoiling its ability to pick up fine detail.

Overall, the Tablet Z is excellent. Svelte design partners nippy performance; nifty features such as water and dust resistance impress; and expandable memory and great battery life seal the deal. The Nexus 10 is better value for money, and will benefit from earlier software updates, but if you don't mind paying a premium for the most accomplished Android tablet, you won't be disappointed.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

- 1 The Sony's Full HD display is bright and colourful
- 2 This is by far the lightest, slimmest tablet on test
- 3 Every flap on the Tablet Z is sealed against the elements

# ACER ASPIRE P3

A POWERFUL, CORE I3-POWERED WINDOWS 8 TABLET, BUT BATTERY LIFE LAGS BEHIND THE COMPETITION

**PRICE** \$999

**SUPPLIER** [www.acer.com.au](http://www.acer.com.au)

**W**hen we first pulled the Acer Aspire P3 from its box, we experienced a touch of déjà vu. This is because the P3 is remarkably similar to the Acer Iconia W700, which we reviewed last year.

It also has an 11.6in screen, it's 11mm thick and it weighs a hefty 790g. It's encased in the same aluminium shell, and finished in matte silver.

The difference between the P3 and the W700 is the specification and the bundled accessories. The internals have been upgraded from a Sandy Bridge to an Ivy Bridge Core i3 CPU, the screen has been downgraded from Full HD to 1366 x 768, and the P3 is bundled with

**BATTERY LIFE: 5HRS 46MINS**



a rechargeable Bluetooth keyboard case/cover instead of a simple case. This keyboard is usable, but it's crying out for a touchpad or trackpoint.

As the only Intel Core-based tablet in the group, its performance blows away the competition. In every mobile benchmark we ran – SunSpider, Geekbench 2, GFXBench and Peacekeeper – it topped the tables. In our Real World Benchmarks, it attained a score of 0.42, and we have absolutely no concerns about responsiveness: the P3 feels as slick as the best tablets on the market.

This is the sort of power that will allow you to happily run demanding applications such as Adobe Photoshop or any video-editing software. The quality of the IPS display is decent, too, with a top brightness of 419cd/m2 and a contrast ratio of 838:1. The downside is poor stamina. In our looping video test, with the screen set to 120cd/m2 brightness, it lasted only 5hrs 46mins.



Despite this, there's plenty to like about the Acer Aspire P3. It will run full-blown Windows apps, it's significantly faster than the Atom-based Windows 8 tablets in this Labs, and its raw speed outstrips the Android and iOS-based devices, too. At \$999, it's a pricey option, but if you're after a serious tablet for serious work, it's a decent all-rounder.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★☆☆
FEATURES & DESIGN	★★★★☆
VALUE FOR MONEY	★★★★☆
<b>OVERALL</b>	★★★★★

# ASUS VIVOTAB SMART

A WELL-DESIGNED WINDOWS TABLET THAT SUFFERS FROM A HANDFUL OF MINOR FLAWS

**PRICE** \$450

**SUPPLIER** [www.asus.com/au](http://www.asus.com/au)

**O**f all the Windows 8 tablets in this Labs, the VivoTab Smart has the sleekest design. On its own, the tablet weighs a reasonable 620g, and with the optional TranSleeve keyboard cover with which our sample was supplied, it still weighs only 1kg.

Yet, with a full-blown copy of Windows 8 onboard, this tablet is capable of acting as your desktop PC, mobile workhorse and sofa browsing device, all in one.

There's a reasonable selection of connectors around the edges: a microSD slot for expanding the tablet's 64GB of internal storage, a micro-HDMI output for hooking up a

**BATTERY LIFE: 12HRS 49MINS**



secondary display, and a single micro-USB port for charging the device and transferring data.

It's here that we hit the first snag, however. If you want to connect peripherals such as external storage or a full-sized keyboard, mouse or printer, you have to use an OTG adapter cable plugged into the VivoTab's micro-USB socket. The problem is you need this socket to keep the tablet charged, and you can't do both at once. The keyboard cover is a bit of a fiddle, too. Unlike the Surface's Touch and Type Covers, it comes in two parts that snap snugly together when closed, but separate for typing. This works fine on a desk, but is unusable on your lap. Asking extra for it is a bit much.

In the benchmarks, the Asus' Atom processor saw it race through the SunSpider test, but its performance was below average elsewhere. Although image quality on the 10.1in IPS display is fine, its 1366 x 768 resolution looks



a little low these days. Battery life is great, however – the Asus lasted 12hrs 49mins in our video test.

All in all, the Asus VivoTab Smart isn't a bad product, but the price is high, especially when you factor in the keyboard cover, and it isn't without its problems.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★☆
VALUE FOR MONEY	★★★★☆
<b>OVERALL</b>	★★★★★



# DELL LATITUDE 10

STORMING BATTERY LIFE AND BAGS OF FLEXIBILITY – OUR FAVOURITE WINDOWS 8 TABLET IN THIS TEST

**PRICE** \$899

**SUPPLIER** [www.dell.com.au](http://www.dell.com.au)

**D**ell's first Windows tablet isn't exactly a thing of beauty. It's plain and angular, and unsightly ports and sockets are scattered all around. It's a tablet built to laptop standards; it's functional, not pretty. However, if it's sheer on-the-go flexibility and rough, tough ruggedness you want, nothing beats this ugly duckling.

For starters, it has a user-replaceable battery that clips into a cavity on the rear of the tablet. You can choose between a lightweight, two-cell battery or a bigger, four-cell unit, which we recommend. It's only \$20 extra, yet delivers huge stamina, lasting 20hrs

**BATTERY LIFE: 20HRS 46MINS**



46mins of continuous use in our looping-video test.

There's plenty of connectivity, including an SD card slot and a USB 2 port, plus a mini-HDMI output along the right edge. Wireless comprises dual-band Wi-Fi and Bluetooth 4. Our review model came with the optional 3G module, and you can also add a pressure-sensitive stylus.

Although the resolution is low, the quality of the display is top-notch, with maximum brightness reaching a searing 533cd/m2 – higher than any other tablet here.

Undoubtedly, the Windows Store falls short of Apple's App Store and Google Play when it comes to the number, quality and price of apps and games. This isn't really an entertainment device, however – it's a mobile workhorse. When it comes to getting work done – connecting to networks and transferring files back and forth; connecting to multiple monitors; using



web apps – there's still nothing to beat Windows. You'll have to rely on third-party accessories if you want a keyboard, though.

The only other big negative is performance. Compared with the latest Android and iOS devices, the Latitude 10's Atom Z2760 CPU isn't particularly powerful; it put in a middling performance in the mobile benchmarks.

Overall, though, we like the Dell Latitude 10. It isn't exotic, slim or sleek, but as an on-the-road working companion, it's a trooper.

PERFORMANCE	★★★★☆
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★☆
VALUE FOR MONEY	★★★★☆
<b>OVERALL</b>	★★★★★

# LENOVO IDEATAB S6000

NOT A BAD DEVICE FOR THE MONEY, BUT THERE'S NOTHING SPECIAL ABOUT THIS BUDGET TABLET

**PRICE** \$299

**SUPPLIER** [www.lenovo.com.au](http://www.lenovo.com.au)

**W**e've been impressed by Lenovo's recent hardware, especially its Yoga range of laptop hybrids. However, the IdeaTab S6000 is cut from far more mundane cloth – it's a straight, 10.1in, Android 4.2 tablet with no exotic extras.

Its design and specification reflects this humdrum status. It's clad in a rather creaky, textured plastic. The display is a standard 1280 x 800, there's only 16GB of storage, and wireless connectivity is perfunctory, with only single-band Wi-Fi and no NFC.

There are a couple of bright spots. Video can be piped to a TV or a monitor

**BATTERY LIFE: 10HRS 39MINS**



via a micro-HDMI port, while a microSD slot lets you expand the storage. The Lenovo is surprisingly slim and light, too, measuring 9mm from front to back and weighing 562g.

It lags well behind in terms of performance, however. The S6000 is powered by a MediaTek 1.2GHz quad-core processor, which is the slowest clock speed we've seen on a 10.1in tablet for some time. This is exposed cruelly in the benchmarks: its SunSpider time of 1529ms was the slowest this month; its Geekbench 2 score of 1333 was nothing special; and although a frame rate of 4.8fps in the GFXBench T-Rex HD test isn't terrible, the S6000 clearly isn't up to the rigours of the latest 3D games – Real Racing 3 and the oddly demanding Despicable Me: Minion Rush felt distinctly choppy.

We also experienced some typing lag when using the stock touch keyboard, which is never a good sign, although scrolling, panning and zooming in



and out of web pages was smooth. The quality of the display is perhaps a greater problem: it was the dimmest on test, at 262cd/m2, and looks grainier than its competitors.

Overall, though, the \$299 Lenovo IdeaPad S6000 isn't bad value for money. It's slim and light, battery life is decent, and we could live with the slightly sluggish performance and dim screen. It's the best of the low-cost tablets featured in this Labs.

PERFORMANCE	★★★★☆
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★☆
VALUE FOR MONEY	★★★★☆
<b>OVERALL</b>	★★★★★

# MICROSOFT SURFACE 2

THE SECOND GENERATION WINDOWS RT TABLET SHOWS POTENTIAL, BUT LACKS APPS

**PRICE** \$529  
**SUPPLIER** [www.microsoft.com](http://www.microsoft.com)

**S**urface will forever stand as one of Microsoft's most confusing product debuts, one of its most hyped reveals followed by underwhelming sales.

With the second generation Surface products Microsoft has really kicked things up a notch, adding a full HD screen to the Surface 2 (which confusingly is the Windows RT version – for some reason Microsoft thought dropping the RT suffix would make life easier), while still retaining the excellent build quality and design that so enamoured us to Surface initially. The Tegra 4 GPU is blisteringly fast, delivering great all-round performance

**BATTERY LIFE: 9HRS 45MINS**



in everything we threw at it, and the optional Touch and Type covers help to make the tablet a seriously useful device when you need to put words onto screen.

The inherent issue with the Surface 2 is that, while it demonstrates excellent performance and is a joy to use, the Windows Store isn't the best source of Apps out there. While we have, in recent years, seen a significant shift to developers producing Apps for both iOS and Android, there is still a general lack of enthusiasm for Windows RT.

This ends up being a dealbreaker for the Surface 2, which just doesn't have the rich variety of software that makes competing Android and iOS tablets so useful and customisable. While there are some interesting novelties, more often than not you'll find that the Windows implementation of an App either doesn't exist or is some painfully low-function link to a website. Until Microsoft can get this situation sorted



out Surface 2 will suffer. While its big brother, the Surface 2 Pro, can fall back on its full Windows legacy and Ultrabook hardware to allow access to a vast software library, the lack of legacy Windows software support renders the Surface 2 an outlier.

This is a crying shame, because everything from the hardware to the pricetag for the Surface 2 is truly excellent, and if it wasn't for the obvious lack of software it would be a serious contender. As it stands, apps are too important for us to ignore.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★

# SAMSUNG GALAXY NOTE 10.1

NOT A BAD DEVICE FOR THE MONEY, BUT THERE'S NOTHING SPECIAL ABOUT THIS BUDGET TABLET

**PRICE** \$500  
**SUPPLIER** [www.samsung.com.au](http://www.samsung.com.au)

**S**amsung has plenty of experience as far as designing cutting-edge tablets is concerned – it built the Nexus 10 – and one of the most novel slates in its own range is the Galaxy Note 10.1. This quirky tablet bucks the trend by adding a stylus to the Android tablet formula.

The digitiser-type S Pen – which is included in the price – docks neatly into the bottom right-hand corner of the chassis. It works brilliantly, adding more accurate note-taking, drawing and handwriting recognition to Android than would otherwise be possible with your finger or a capacitive stylus.

It's accompanied by a clutch

**BATTERY LIFE: 8HRS 56MINS**



of proprietary Samsung apps and optimisations that help you make the most of its abilities; it's even possible to have your favourite note-taking or photo-editing app launch whenever you withdraw the stylus from its slot.

On the features front, there's plenty more to play with: there's an infrared transmitter for remotely controlling your TV and set-top box; a microSD card slot for expanding the storage from the base 16GB (32GB and 64GB models are also available); and a pair of loud, front-facing speakers, which mean you don't have to resort to headphones when watching videos and movies downloaded from Google Play.

Elsewhere, alas, it's less impressive. The screen is bright, but the resolution is showing its age, with a standard 1280 x 800 delivering a distinctly grainy 149ppi. Quality is shaky, with detail lost in shadows and highlights. The tablet is physically underwhelming, too, finished in cheap-looking glossy plastic. Battery



life, at 8hrs 56mins, is unexceptional, as is performance – the Note lags behind the best here.

In short, the Galaxy Note 10.1 is a decent tablet with attractive features, especially the S Pen stylus. However, we'd expect better performance and a nicer display for \$500.

PERFORMANCE	★★★★★
BATTERY LIFE	★★★★★
FEATURES & DESIGN	★★★★★
VALUE FOR MONEY	★★★★★
<b>OVERALL</b>	★★★★★



## VIEW FROM THE LABS

Windows, iOS or Android – which platform do you choose? This was the key question we wanted to answer at the outset of this Labs. We've compared Apple iPads with Android tablets before, but we've never thrown Windows tablets into the mix as well. Although the overall outcome hasn't changed – the iPad remains top dog when it comes to tablets – the choice today isn't as straightforward as it once was.

This is mainly down to the hybrid nature of Windows 8. The tablets running Microsoft's OS might not compete with the iPad and Android tablets when it comes to dedicated touch software – the Windows Store is sorely lacking in the quality and quantity of apps available – but they're far more capable work devices.

It's possible to extend your screen onto a secondary monitor from any of the Windows 8 devices, whereas the Android and iOS tablets will – less usefully – simply mirror their displays.

Although Android tablets do allow the connection of storage devices and peripherals through optional cable adapters, they don't always work perfectly. The Nexus 10, for example, currently

requires a paid-for app to enable files to be imported and exported from an externally attached USB drive. Windows 8 tablets, on the other hand, just work – either via a standard USB host socket, or an OTG adapter (USB On-The-Go).

Additionally, when you consider that the Windows 8 tablets can also run desktop programs such as Photoshop and Office, in addition to touch-friendly Windows Store apps and games, they begin to look like the ultimate all-round solution: lighter than a

## “The Windows Store is sorely lacking in the quality and quantity of apps available”

laptop, or even an Ultrabook, yet capable of serious computing.

We see potential in the world of Windows tablets, but what counts against them is what happens when you separate them from their keyboards.

Yes, you can still browse the web, but the lack of high-quality apps means it can

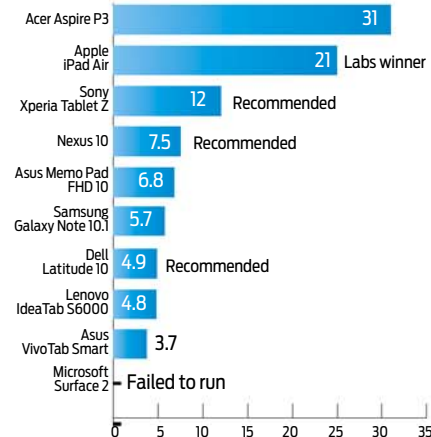
be a frustrating experience. Even when there are decent apps available, the prices are often significantly higher than on other platforms. That's before we even get onto the frustration of navigating Windows menus or using desktop software without a mouse to hand. Good luck tweaking the power profiles with touch alone, let alone trying to edit snaps in Photoshop.

To a lesser degree, this is also the reason the Android tablets come second to the iPad once again. There's nothing wrong with the hardware – we'd love an iPad that was as light as the Sony Xperia Tablet Z with its waterproofing and infrared transmitter. But although there are plenty of apps on Google Play, many still lack a user interface that has been designed specifically with larger-screened tablets in mind. The Apple App Store, in contrast, offers iPad owners an embarrassment of riches.

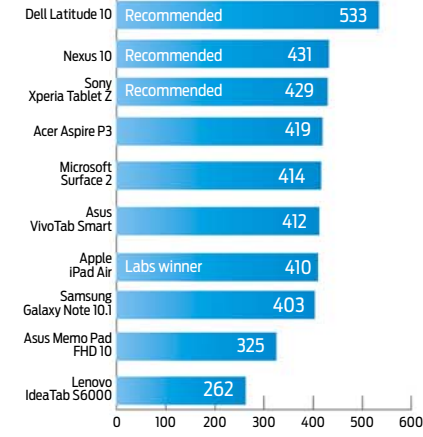
With hardware prices coming down all the time, and more people opting for these cheaper alternatives, there will inevitably come a time when we recommend something other than an iPad. However, that doesn't look like it will be happening any time soon.



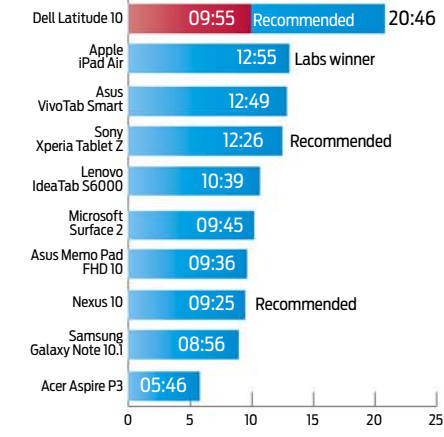
GAMING – GFXBench T-Rex HD (onscreen) fps



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BATTERY LIFE hrs:mins



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# XCOM: ENEMY WITHIN

FIRAXIS ADDS A NEW LAYER OF COMPLEXITY TO ONE OF OUR FAVOURITE GAMES OF RECENT TIMES

**DEVELOPER** Firaxis  
**PUBLISHER** Take 2  
**WEBSITE** [www.xcom.com](http://www.xcom.com)

In these days of quick-fix DLC it is rare to encounter a proper expansion pack, one that takes an original game and builds on it in new ways, creating an experience greater than the sum of its parts. Enemy Within is such a product, adding a new layer of complexity to the already stellar XCOM: Enemy Unknown.

At heart this complexity comes from the newly discovered Meld resource, which plays a big part in the turn based strategy combat of Enemy Within. On most maps you will come across Meld containers. Once spotted, these have a limited number of turns before they decay, and you want to get your troops to them as quickly as you can. This adds a new degree of pacing to the game, forcing you to take chances, and occasionally rush long distances to secure the meld, unsure of the enemies that await.

Once researched, Meld can be spent in two major areas. It can be used to

genetically modify your soldiers, or to turn them into giant hulking mechs. The sheer brilliance behind this mechanic is that, due to its limited supply, you can't have it all – you'll effectively need to choose a path and stick to it, or you'll find yourself out of meld and with severely reduced options.







## "It is enough to provide a fresh experience for even the most played out fans."

Meld also adds another level of tension over your soldier's rate of survival. Unlike normal troops, who solely level through experience, your genetically or mechanically enhanced soldiers are an investment. Mechs are tough, and are often at their best wading into the middle of a room and opening fire, but despite their bullet-soaking abilities, losing one is tough, with both the enhanced soldier dead and the mech frame in need of repair. That all means spending more Meld, so if you are too reckless you'll run out of supply.

Alongside this mechanic is a new secondary storyline that has you combating a shadowy group of humans called EXALT. Your run-ins with them involve sending out covert operatives, and then providing an extraction with your team. These human enemies provide a great change of pace from the usual roster of aliens, and adds greatly to the variety of experiences delivered

by the game.

We were really quite stunned at how comprehensive the additions are in *Enemy Within*. From these new mechanics through to a much greater variety of maps and environments, it is enough to provide a fresh experience for even the most played-out of *Enemy Unknown* fans.

While the game is still, at heart, the same, Firaxis has managed to revamp the entire experience, while also focusing on increased replayability rather than just a short-lived new bit of story. Deciding which path to take your soldiers down when spending meld is a decision that lives with you throughout the game, and more than ever this feels like a game of managing decline, of holding on against inevitable failure just long enough to turn the tide.

Not only does it have this effect on the macro level base management side of the game, but it dramatically changes your tactics and gameplay on



### PLATFORMS

PC · Xbox 360 · PS3  
Tested on PC

the ground as well. Mechs play quite differently to a SHIV heavy weapons platform for example, being much more agile and packed with more strategic options like the ability to deliberately destroy cover. Genetic modifications, on the other hand, change the way in which you deploy existing classes, with options like stealth skin and the ability to leap onto roofs having a huge flow-on into the way in which you combat the alien threat.

*XCOM: Enemy Within* is just plain wonderful. It takes a truly great game and makes it better, adding depth and complexity without ruining the core concepts that made *Enemy Unknown* such a standout. Firaxis has yet again demonstrated that it is a developer at the top of its game, and we can't wait to see what comes next for the *XCOM* brand.

**John Gillooly**



A great game made even greater

**RATING**







# NEED FOR SPEED: RIVALS

THIS HIGHLY POLISHED RACING GAME FOCUSES ON PURE ADRENALINE MORE THAN INNOVATION

**DEVELOPER** Ghost Games  
**PUBLISHER** Electronic Arts  
**WEBSITE** [www.needforspeed.com](http://www.needforspeed.com)

**N**eed for Speed seems to be a pretty bullet proof franchise these days. It can deliver the odd stinker (The Run, I'm looking at you), but in a year or two the game will fold back to its roots and deliver a highly competent, if ever-so-slightly uninspiring racer.

That pretty much sums up Rivals, which is high on gloss and excitement, but a touch lacking in any real compelling depth or mechanics.

The game does what it says on the tin, structuring itself around the constant battle between rebel ne'er-do-well racers and the cops who try to run them off the road. In terms of plot and structure it's a mere afterthought – after all, the aim of the cops isn't so much a good arrest as to more or less kill racers. I don't know about you, but when I see a million dollar sportscar spear off the road and crash and burn there's not going to be anyone surviving!

The racers are equally vapid, wanting to do nothing more than go fast. You might think this is damning, but after The Run it's actually refreshing – Need for Speed: Rivals is about getting the bare minimum of structure around the game's core mechanic: sexy cars, high speed

chases, and constant upgrades.

The game begins with the appearance of choice – you pick racer or cop – and then goes into a brief tutorial to show you the basics of either pursuit or evasion. But it's purely cosmetic; once it's complete you're told to do the second tutorial, and then you're







free to switch between lawbreaker and lawkeeper throughout the game.

Both sides get a mix of upgrades and weapons to use as the game progresses, but as decisive as they can be, more often than not it still comes down to pure racing. The racer's turbo boost is probably the most effective boost you can get, easily outpacing most cop cars, whereas the cop upgrades such as spike traps and sonic thingies are a little more tame, and rather prone to be useless if mistimed. Ramming racers is still easily the most foolproof – and satisfying – way to get them out of the game.

Of the two, it's probably the racer who gets the best gameplay. Pursuit is fun, but there's nothing quite like being tailed by an entire pack of cop cars as you scream through twisty mountain roads or beachfront resorts.

The game's fictional Redview County (which must have just about the highest crime and vehicular fatality rate in the world) is certainly a gorgeous place to race and chase, but it's lacking in built-up urban areas, which is a shame. For a game built

around car chases, it would be great to get your own personal iterations of the greatest of them, from the classic film Bullitt, a race which goes from tense street racing to the long, sweeping curves of the hills outside San Francisco – in Rivals, it's all the latter, without the former.

The cars all control really well. It's a much more approachable game than, say, Forza. Rivals wants everyone to feel like elite drivers, and even playing on keyboard – which we would not recommend – you can still get a good deal of control. With a gamepad, though, or a dedicated steering wheel, each car feels sufficiently unique, and fun to race. And boy, do they all look good. Whether handling corners at high speed or crashing out in a ball of flame, Rivals is certainly attractive.

However, it's also not really anything new. There's a lot of Hot Pursuit in Rivals, making it feel almost like a mere iteration of that title rather than anything truly new. If you liked that game a lot, that's likely not a bad thing, but it can all feel a bit samey. If you skipped Hot Pursuit, though, this

#### PLATFORMS

PC • Xbox 360 •  
Xbox One • PS3 • PS4 •  
Tested on PC

game will feel fresh enough to keep you interested for a while.

Getting some pals together for multiplayer is probably the best way to keep the game fresh, and with six players all tooling around Redview, the game comes alive. You can team up to outrun or pursue the AI, or go head to head, and the intense pace of the game means there's never a dull moment. You can always easily fast travel to where your friends are, or you can just do your own thing, just happy to have pals on the same map.

At its best, Need for Speed: Rivals is everything that's great about the series – ludicrously fast cars, getting chased by ludicrously fast cars in cop colours. It falls apart if you think about it too much, but otherwise is a tonne of fun.

**David Hollingworth**



A tonne of fun on both sides of the law, and graphically impressive, but a little repetitive

**RATING**







## GIGABYTE & INTEL OC EVENT

GIGABYTE AND INTEL PARTNERED UP WITH ATOMIC FOR A NIGHT OF LIQUID NITROGEN AND EXTREME COMPUTING – AND MAYBE A DRINK OR TWO...

There are few things in computing that can match the spectacle of extreme overclocking. There's something about the combination of hardware pushed to its very limit, and the dramatic use of super-cool liquid nitrogen to keep it all running, that just looks... well, check out these pics, from our GIGABYTE & Intel Overclocking night last December.

Held at our Atomic HQ, we hosted two of Australia's best overclockers. Dino Strkljevic (who's also GIGABYTE's motherboard product guy here in Australia) and Josh Collins (who some

of you may remember as the deputy editor of Atomic a few years ago) hosted two dedicated overclocking stations to show our guests how it's all done.

With our crowd of enthusiasts split up into four teams, the games (and the odd round of Counter Strike and a few beers) began!

Impressively, Josh and the two teams he paired with lucked onto an incredible processor, showing some truly extreme results from his 4770K processor. Supplied fresh from Intel, it was one of the fastest pieces of silicon

either Dino or Josh had ever seen!

So it's no surprise then that one of Josh's teams won. There were door prizes too, and lots of smiles from everyone, winner or otherwise.

But most of all, as always, it was great to get a room full of serious enthusiasts together, chatting, overclocking, gaming, and generally enjoying themselves.

We may be in a new office this year, but we're still planning to bring you more great, casual events. For everyone who came along in 2013, thanks for joining us!









# THE A-LIST

ONLY THE BEST OF THE BEST MAKE IT TO PC & TECH AUTHORITY'S A-LIST

Our A-List contains a collection of the best products to pass through our testing labs in recent times. We've revamped and trimmed down the previous list, and updated some of the out of date products. You'll also find that we have incorporated the Atomic Kitlog, replacing the old collection of components on the A-List with two potential system builds, a reasonably priced all-rounder and the bleeding-edge perfect PC.

Another thing we have done is to step away from adding pricing to categories like software. Given the amount of fluctuation that we see from month to month, it is worth searching out pricing for yourself. We personally use the price aggregators [www.staticice.com.au](http://www.staticice.com.au) and [www.shopbot.com.au](http://www.shopbot.com.au) but there are a myriad other options that will give you current pricing for tech items, pricing that will be a lot more timely than anything we supply.

## ALSO RECOMMENDED

### ▶ ADOBE LIGHTROOM 5

★★★★★

We really enjoyed our time with the beta, and we're still finding it to be an even more essential suite for photographers of any stripe. However, as the beta is all that's available, we've left Lightroom 4 listed here in the A-List for this issue. But if you're at all curious, check it out for yourself!



## PCS DESKTOPS ▼

### HIGH-END TI DELUXE 4670K

★★★★★

PRICE \$1885 SUPPLIER [www.ticomputers.com.au](http://www.ticomputers.com.au)

With an overclocked Core i5 CPU boosted up to 4.2GHz, and a speedy GeForce GTX 770, this is a great system for anything you could throw at it.

**SPECIFICATIONS** Core i5-4670K @ 4.2GHz • ASUS Z87-A • 16GB DDR3 • 2GB GeForce GTX 770 • 120GB HDD • 2TB 7200rpm HDD • 750W PSU • Blu-ray combo drive. **WEB ID** N/A



### GAMING SCORPTEC THERMALTAKE GTX 760 PC

★★★★★

PRICE \$1499 SUPPLIER [www.scorpvec.com.au](http://www.scorpvec.com.au)

This Haswell-based PC strikes a great balance between gaming grunt and cost effectiveness – a great all rounder.

**SPECIFICATIONS** Intel Core i5-4570; 8GB DDR3 RAM; 120GB SSD; 1TB 7200rpm HDD; DVD-RW; NVIDIA GeForce GTX 760; Thermaltake Chaser A31 case. **WEB ID** N/A



### ALL-IN-ONE APPLE IMAC 27IN

★★★★★

PRICE \$1949 SUPPLIER [www.apple.com/au](http://www.apple.com/au)

If you can afford it, the 27in iMac is the finest piece of all-in-one engineering on the market. A truly powerful beast with performance to match its looks.

**SPECIFICATIONS** 2.7GHz Core i5-2500S; 4GB DDR3 RAM; 1TB Western Digital Caviar Black HDD; DVD writer; AMD Radeon HD 6770M graphics; 27in 2560 x 1440 LCD. **WEB ID** N/A



## HANDHELDS ▼

### SMARTPHONE NEXUS 5

★★★★★

PRICE From \$399 SUPPLIER [www.google.com](http://www.google.com)

At half the price of some more popular phones, the Nexus 5 still delivers incredible performance and battery life, with pure KitKat goodness!

**SPECIFICATIONS** 2.3GHz Quad-core Snapdragon CPU; 16GB internal memory; 4.95in 1920x1080 IPS display; 8MP camera; 136g



### TABLET APPLE IPAD AIR

★★★★★

PRICE \$539 SUPPLIER [store.apple.com/au](http://store.apple.com/au)

The new iPad is pretty much the king of the hill when it comes to tablets, smaller and more powerful than ever before.

**SPECIFICATIONS** 9.7in 1536x2048 widescreen Multi-Touch display; 16GHz A5X processor, 16, 32 or 64 GB available; 3G and/or Wi-Fi connectivity; max 652g weight.



### EBOOK READER KINDLE

★★★★★

PRICE \$109 SUPPLIER [www.amazon.com](http://www.amazon.com)

The new model is quicker, slimmer, lighter and cheaper than before. If all you want to do is read books, its simple design and performance are perfect.

**SPECIFICATIONS** 6in e-Ink screen, 170g weight, 114 x 87 x 166 mm, 2GB memory, 10-day battery life. **WEB ID** 279534



# PCS LAPTOPS ▼

## VALUE ASUS X202E

★★★★★

**PRICE** \$699 **SUPPLIER** [www.asus.com.au](http://www.asus.com.au)

This touch-enabled Windows 8 laptop may not technically qualify as an Ultrabook, but it comes pretty close, and combines decent performance with a slick design for an excellent price.

**SPECIFICATIONS** Intel Core i3-3217U; 4GB DDR3; 500GB HDD; 11.6in 1366x768 Touch LCD; Wi-Fi; Ethernet; HDMI.



## GAMING VENOM BLACKBOOK 17

★★★★★

**PRICE** \$3199 **SUPPLIER** [venomcomputers.com.au](http://venomcomputers.com.au)

Packed with powerful components, and featuring some of the best quality video and audio we have encountered, this is a true gaming powerhouse.

**SPECIFICATIONS** 2.2GHz Core i7-3630QM; 4GB Nvidia GTX 680M; 16GB DDR3; 1920 x 1080 17.3in screen; 1GB HDD + 256 GB SSD; 802.11a/g/n; USB 3.



## HIGH-END LENOVO THINKPAD X1 CARBON

★★★★★

**PRICE** \$2127 **SUPPLIER** [www.lenovo.com/au](http://www.lenovo.com/au)

We've been waiting a long time for a truly modern ThinkPad, and the X1 Carbon does not disappoint. It is powerful, very well-engineered, and looks the part.

**SPECIFICATIONS** 1.8GHz Intel Core i5-3427U; 8GB RAM; 128GB SSD; 14in 1600 x 900 LCD; 1 x USB 3; 1 x USB 2; dual-band 802.11abgn Wi-Fi; Bluetooth 4; 3G; 3yr RTB warranty; 331 x 226 x 19mm (WDH); 1.36kg. **WEB ID** N/A



## ULTRA PORTABLE DELL XPS 13

★★★★★

**PRICE** \$1899 **SUPPLIER** [www.dell.com.au](http://www.dell.com.au)

Our previous favourite Ultrabook achieves perfection, thanks to an update to Ivy Bridge and the inclusion of a gorgeous Full HD 1080p screen.

**SPECIFICATIONS** 2.50GHz Intel Core i7-3537U; 8GB DDR3; 256GB SSD; 802.11n; Bluetooth 4; 13in 1920 x 1080 screen



# PERIPHERALS ▼

## WIRELESS ROUTER ASUS DSL-N55U

★★★★★

**SUPPLIER** [www.asus.com.au](http://www.asus.com.au)

A high-speed router that looks striking and delivers everything you could want for home connectivity

**SPECIFICATIONS** 802.11abgn wireless router; 4 x Gigabit Ethernet ports; 2 x USB; PPOE; PPPoE; L2TP; 145x63x174mm.

## DESKTOP STORAGE SEAGATE 2TB BACKUP PLUS DESKTOP

★★★★★

**SUPPLIER** [www.seagate.com](http://www.seagate.com)

This 2TB external drive still offers good value despite the rise of higher capacity drives. The USB 3.0 adaptor makes for excellent transfer speeds and the design is tasteful and compact.

**SPECIFICATIONS** 2TB external hard disk with NTFS; USB 3.0, with other docks available as optional; 44 x 124 x 158mm 894g.

## NAS BUFFALO CLOUDSTATION 2TB

★★★★★

**SUPPLIER** [www.buffalotech.com](http://www.buffalotech.com)

Remarkably easy to set up, the Cloudstation features support for the highly functional Pogoplug smartphone app, letting you access all your stored data remotely – a great product for the price.

**SPECIFICATIONS** Gigabit Ethernet; Android and iOS apps; 45 x 150 x 175mm; persistent Internet connection required.

## ALL-IN-ONE PRINTER CANON PIXMA MG5460

★★★★★

**SUPPLIER** [www.canon.com.au](http://www.canon.com.au)

The winner of our most recent printer group test, this combines excellent print quality with decent costs.

**SPECIFICATIONS** 9600 x 2400dpi print; 2400 x 4800ppi scan; USB; 802.11n WLAN; 125-sheet tray; 455 x 369 x 148mm

## LASER PRINTER DELL B1160W

★★★★★

**SUPPLIER** [www.dell.com.au](http://www.dell.com.au)

The best all-rounder in our printer group test, with excellent text printing and decent costs.

**SPECIFICATIONS** 1800 x 600dpi resolution; USB 2; Wi-Fi; 150-sheet input trays; 331 x 215 x 178

# SOFTWARE ▼

## SECURITY BITDEFENDER INTERNET SECURITY 2013

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The winner of our annual security software group test, coping better with virus cleanup and malware detection than the competition.

## BACK UP ACRONIS TRUE IMAGE 2013

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**SUPPLIER** [www.acronis.com.au](http://www.acronis.com.au)

A clear and well-organised front end makes this easier to use than ever. Not much has changed from previous years, but it remains our go-to backup solution.

## OFFICE SUITE MICROSOFT OFFICE 2013

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Amidst new touch features, there are some fantastic new additions to the latest office.

## WEB DEV ADOBE DREAMWEAVER CS5

★★★★★

**SUPPLIER** [www.adobe.com.au](http://www.adobe.com.au)

This edition makes PHP and CMS its core focus, which gives it the new lease of life it so desperately needed.

## AUDIO CUBASE 6

★★★★★

**SUPPLIER** [www.steinberg.net](http://www.steinberg.net)

The addition of better tools for live recording pushes this program to new heights and gives it a well-deserved place on the A-List.

## VIDEO SONY VEGAS MOVIE STUDIO HD PLATINUM 10

★★★★★

**SUPPLIER** [www.sony.com.au](http://www.sony.com.au)

May not have the bells and whistles of other consumer editing packages, but its tools are efficient.

## PHOTO ADOBE PHOTOSHOP LIGHTROOM 4

★★★★★

**SUPPLIER** [www.adobe.com.au](http://www.adobe.com.au)

An excellent tool for photo management and light editing, now available at a very reasonable price.



# KITLOG

**T**hese are two basic systems, with something for every taste. The Game Box is put together with money saving in mind, but also an eye to getting as much bang for your buck as possible. Our build may be a little more expensive than what you could technically get away with, but for that extra few hundred you're also getting cutting edge performance and one of the most overclockable chips you can get today.

The Perfect PC, on the other hand, is the system everyone aspires to, with nothing but the best parts – without going crazy, though. It's a collection of all the greatest hardware that we'd pick without a budget, sure to impress with performance and sheer style.

Whether you choose to go specifically for these builds or use them as a baseline to work on, you'll find that these are the best components and peripherals that we have encountered in recent times. As with our A-List, it is worth checking out price aggregator websites to get the best deal on components, with some parts like RAM and hard drives renowned for varying on an almost daily basis due to market factors.

One thing to keep in mind if you are choosing to build your own PC: you'll need to add the cost of a copy of Windows onto the overall price. At the time of writing, this was around \$150 for an OEM 64-Bit copy of Windows 8. We also don't include optical drives. If you need an optical drive we suggest going for a USB model, which can perform double duty with Ultrabooks and other laptops, rather than being stuck inside your PC.

## OUT OF DATE?

While we still stand by everything in our KitLog, there's no denying that it's all getting a little long in the tooth, and some of it isn't even available any more!

We've always intended the KitLog to be very much based on real world needs, and to that extent do not want to pack it with needless upgrades when the current hardware can do the job perfectly well. Which, in the current climate of hardware far outstripping software demands... means these systems – which are very close to what we actually use – haven't seen a lot of changes.

But that, ironically, is going to change.

John and I are planning on a big PC building special in a few issues, and we're each going to focus on a different kind of build, and these builds in turn will be what our new KitLog is based upon. These will be systems we plan to use ourselves, in real life, real computing, real gaming situations. As we see new kit we absolutely must have, we'll be sure to update it; you'll know that it's not based just on score alone – it will be something we personally endorse. So watch this space!

## THE GAME BOX

CPU



INTEL CORE I5 3570K

**PRICE** \$245

Remove the Hyper Threading, and save \$150? DEAL! You can always opt for a non-K version CPU if overclocking isn't your thing.

MOTHERBOARD

GIGABYTE Z77X-UD3H

**PRICE** \$185

Affordable gaming performance and features, without the overkill seen with a lot of gaming-specific motherboards on the market.



MEMORY



G.SKILL RIPJAWS  
F3-12800CL9D-8GBXL

**PRICE** \$55

Great value, decent performance, and some flexibility. RAM is universally cheap now, so higher capacities are still viable for budget builds.

VIDEOCARD

GIGABYTE HD7870 OVERCLOCKED

**PRICE** \$260

Performance close to the 7950, with a pricetag nowhere near. It also looks like there won't be new GPUs for a while yet, so this card will last a while.



## THE PERFECT PC

CPU



INTEL CORE I7 3770K

**PRICE** \$350

8 Threads of Ivy Bridge efficiency. Overclock for justice! This CPU is so good it has rendered the Socket 2011 enthusiast platform redundant.

MOTHERBOARD

GIGABYTE G1 SNIPER 3

**PRICE** \$380

It's about as super-premium as you could get, or want, thanks to added features like SoundBlaster audio and Killer NIC.



MEMORY



CORSAIR VENGEANCE LOW PROFILE  
CML16GX3M4A1600C9B

**PRICE** \$120

16GB of fast memory. Virtualise everything! The low profile design means that it won't fight for space with your cooling solution.

VIDEOCARD

MSI GTX N780 LIGHTNING

**PRICE** \$960

Overkill for most people, this card delivers amazing performance and incredible overclocking ability – you won't need to upgrade for years!



SUBTOTAL: **\$1694**RIG ONLY: **\$1084**

## COOLER



## ANTEC KUHLER 620

**PRICE** \$85  
Water cooling is the future, today! These closed loop coolers make it much cleaner inside your PC case.

## CASE



## BITFENIX RONIN

**PRICE** \$99  
BitFenix continues to deliver great budget cases that look and build great.

## SYSTEMDRIVES



## 2TB HDD

**PRICE** \$90  
2000 gigabyte storage drive on the cheap. 3TB are coming down in price too.

## PIONEER DVR-219L

**PRICE** \$35  
Discs. You needs 'em. A USB DVD drive is also a viable alternative.

## KEYBOARD



## RAZER ARCTOSA

**PRICE** \$50  
A cool-looking keyboard that'll serve you very well if you can't afford the jump to mechanical.

## DISPLAY



## LG IPS277L

**PRICE** \$400  
27 inches of IPS glory. The resolution isn't perfect, but the price is. The thin bezel makes this a very attractive screen.

## MOUSE



## CORSAIR VENGEANCE M60

**PRICE** \$70  
Exceptional mousing value with a great, unique design and a very handy sniper mode button for the FPS fans

## AUDIO

## TT ESPORTS CRONOS

**PRICE** \$80  
Fantastic set of headphones that delivers great 2.1 audio for gaming and music without swamping you with bass.



## ONBOARD REALTEK ALC889A

**PRICE** NA  
A decent chip that does the job.

## POWER SUPPLY

## SILVERSTONE STRIDER 500W

**PRICE** \$65  
A solid PSU, capable of powering much more if you ever choose to upgrade.

SUBTOTAL: **\$4645**RIG ONLY: **\$3530**

## COOLER



## CORSAIR H100i WATER COOLER

**PRICE** \$160  
Fits perfectly in the Cosmos S II, mounting directly on the roof!

## CASE



## COOLER MASTER COSMOS II

**PRICE** \$400  
The only case you'll ever need. Premium luxurious bliss.

## SYSTEMDRIVES



## OCZ REVO DRIVE 3 X2 &amp; WD 1TB VELOCIRAPTOR

**PRICE** \$490 + \$350  
Superfast SSD and zippy storage make for a monstrous system indeed.

## KEYBOARD



## RAZER BLACKWIDOW ULTIMATE

**PRICE** \$160  
Mechanical gorgeousness.

## DISPLAY



## ASUS PB278Q

**PRICE** \$690  
One of the best 27in monitors on the market, with a pricetag that makes us forget the competition even exists.

## MOUSE



## RAZER OUROBORUS

**PRICE** \$135  
An excellent performer and highly configurable mouse that suits both left- and right-handers.

## AUDIO

## PLANTRONICS RIG

**PRICE** \$130  
For sheer features and flexibility, possibly the best cans on the market today.



## POWER SUPPLY

## ANTEC HCP 1200W

**PRICE** \$320  
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# HOW TO

Each month our experts get under the hood to provide you with detailed How To guides on hardware, software and everything in-between.

SYSTEMBUILDER

## Getting off Windows XP



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HOW TO

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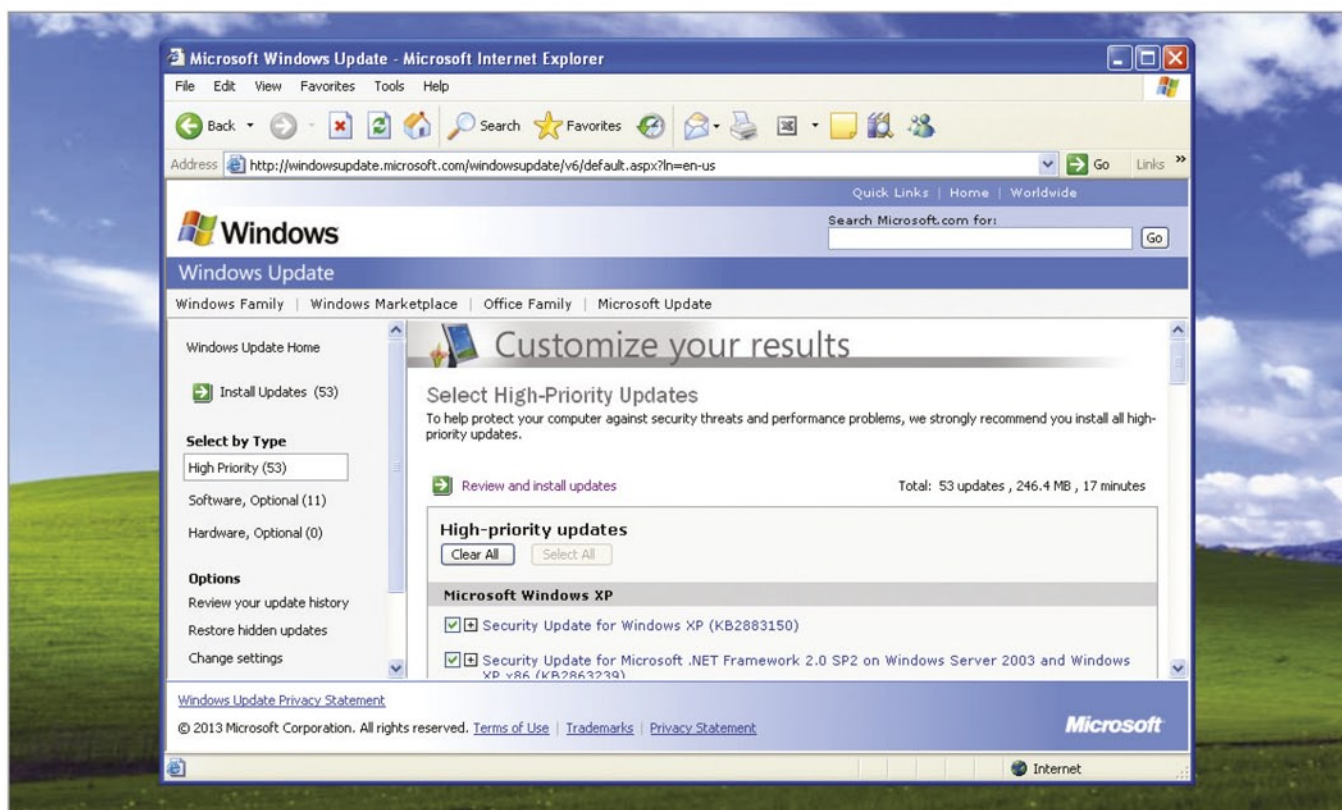




# SYSTEM BUILDER:

## What to do if you're still on Windows XP

MICROSOFT WILL SOON STOP UPDATING XP, WHICH MEANS IT'S DECISION TIME FOR ANYONE STILL USING IT. **DAVID BAYON** RUNS THROUGH YOUR POST-XP OPTIONS



It's the end of an era. On 8 April 2014, almost 13 years of official support for the much-loved Windows XP will come to an end. For an OS that's three releases behind the times, this shouldn't be big news, but XP has proved remarkably tenacious. Net Applications measured 31.2% of the world's PCs still running XP in October 2013.

That's a problem: when Microsoft stops supporting an OS, it doesn't only withdraw its technical-support services – it also stops updating

the software. Among other things, this means no more monthly fixes to protect against new viruses and malware. Anybody still using XP will be stuck with the OS as it stands on that final day, and you can expect any security vulnerabilities subsequently discovered to be ruthlessly targeted.

Carrying on without support and an increased security risk is an unappealing prospect, so if you don't have a migration plan, it's really time you put one together. In many cases,

your easiest option will be simply to buy a new PC with a more up-to-date version of Windows preinstalled – especially if your current system dates from the early years of Windows XP. But if that doesn't suit, there are several other options for a Windows XP system that's reaching the end of the line.

### UPGRADING TO A NEWER VERSION OF WINDOWS

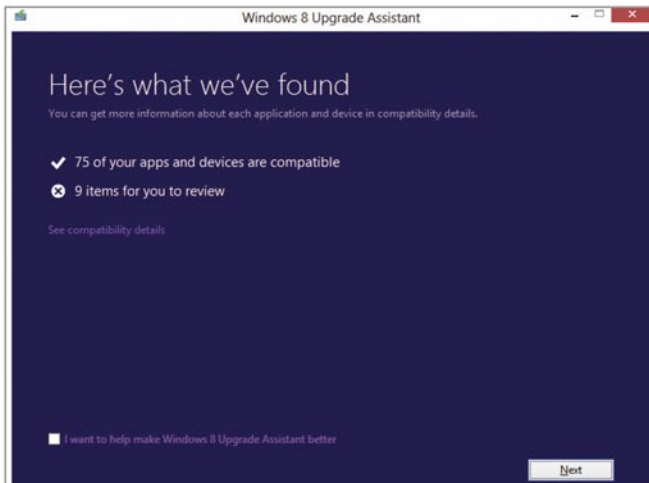
If your system isn't too ancient, you can upgrade it to a more recent

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COOL!!! YOUR LIFE  
**Toughpower XT**  
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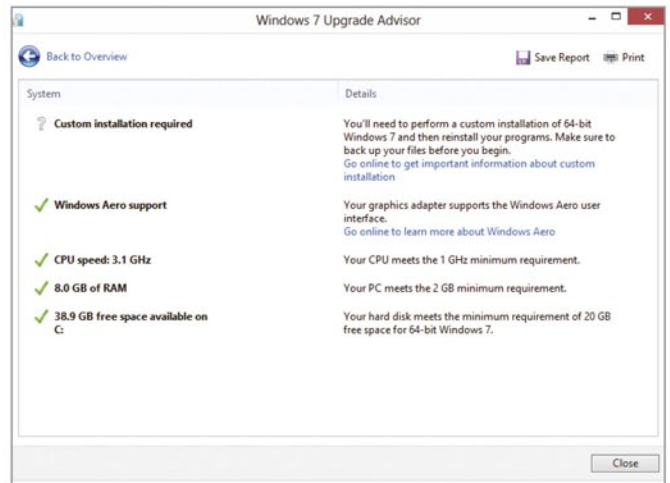


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▲ The Windows 8 Upgrade Assistant warns of potential upgrade issues



▲ Windows 7 includes a standalone tool called the Upgrade Advisor

edition of Windows and carry on with minimal disruption. Microsoft lists the core requirements for Windows 8 as a 1GHz processor, 1GB of RAM and a 20GB hard disk. That means all but the oldest PCs should be able to cope, perhaps with some extra system RAM or storage. If you plan to upgrade the above, make sure you buy the right parts for the sockets on your motherboard, which may predate modern standards.

You can check exactly how ready your PC is for Windows 8 by downloading the Upgrade Assistant from <http://tinyurl.com/mxktkav>. This free tool will scan your system and check that it meets the hardware requirements, and if you connect your peripherals it will scan those for compatibility too. Assuming everything is in order, you'll then get the option to purchase and download Windows 8.

Be warned that when you upgrade from Windows XP to Windows 8, all settings and applications will be wiped. Your personal files will be safe, but you'll need to track down installers for all the programs you want to keep using.

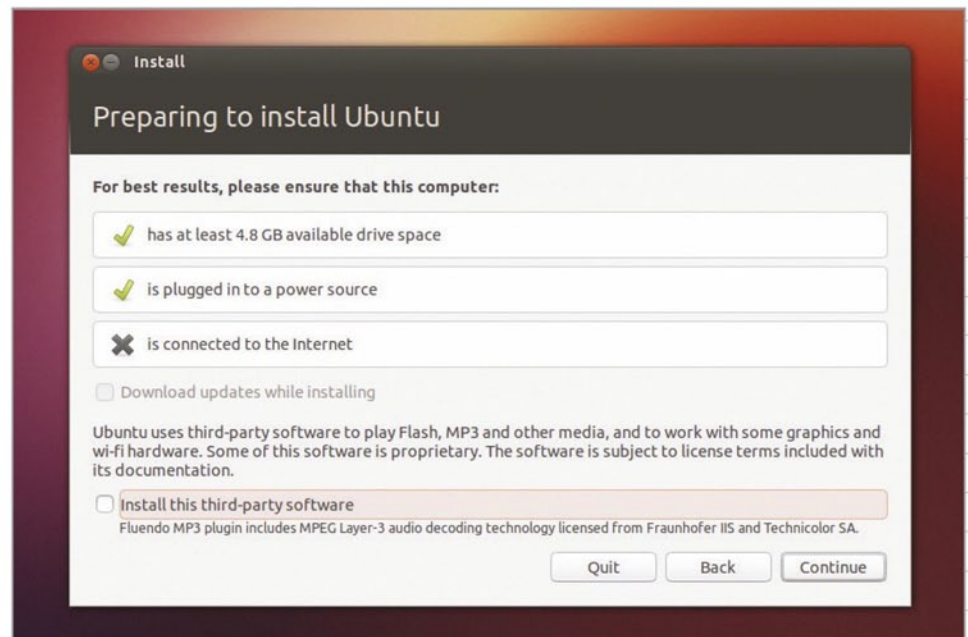
The good news is that most software that runs in Windows XP should also work in Windows 8. If you hit problems with a particular application, try running it in Compatibility Mode. Right-click its icon and choose Troubleshoot Compatibility – or search your computer for “Run programs

made for previous versions of Windows”. Follow the onscreen instructions to see if the application fares better with settings that emulate an older edition of the operating system, and you might be in luck. If this doesn't work, you may need to run the application in a virtual XP environment (see XP Mode, p87).

Windows 8 isn't your only upgrade option. Since its touch-focused features won't be relevant to your old system, you may prefer to upgrade to Windows 7. Consumer

licences are no longer sold by Microsoft, but you can still obtain them from online retailers, and the software will continue to receive security updates until 2020 at the earliest.

Certain editions of Windows 7 include a feature called XP Mode – a virtualised Windows XP environment that you can use to install and run old applications that might not work in Windows 7. This feature isn't included in Windows 8, but you can set up something similar yourself.



▲ Linux distributions such as Ubuntu offer a free and lightweight alternative to Windows 7 or 8



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### What the critics say:

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As with Windows 8, after you upgrade from XP to Windows 7, all of your applications will have to be reinstalled in the new operating system. Your personal data may not all be safe, either: Microsoft recommends that you use the Windows Easy Transfer utility (<http://tinyurl.com/y2o5wkr>) to gather together all your files onto an external storage device.

When you've been through the Windows 7 installation process, you can attach your external storage device and double-click the Windows Easy Transfer file to automatically move your

provides drivers for graphics cards going back to 1999's GeForce 256, while AMD's legacy driver support stops at the Radeon HD 5000 from 2009.

If you want to try out Linux without jumping in at the deep end and blitzing your Windows XP installation, you can set up a "live" installation that runs from a USB flash drive or a CD instead of your hard disk. You can set this up by downloading your chosen distro, then using a free tool such as the Universal USB Installer (available from [www.pendrivelinux.com](http://www.pendrivelinux.com)) to create a live-mode boot disk. If your

working out the best Linux equivalents of your current XP tools.

The option to create a dual-OS system used to be offered by Ubuntu's Windows-based installer, but this has recently been dropped, owing to compatibility issues with Windows 8. To set it up manually, first follow the instructions above to create a bootable USB drive or an installation CD; then choose the option to install Ubuntu when you reach the boot menu. If the installer recognises XP properly you'll be offered the option to install Ubuntu alongside it, and to choose your own storage distribution. If not, choose "Something else" and you'll be taken to the partition menu to handle things manually.

Select the Windows partition and choose a new, smaller size for it – you'll want to free up at least 10GB for Ubuntu. Create a dedicated "swap partition" of at least your amount of RAM (2000MB is a good value), and then create a partition for Ubuntu itself from the remaining free space. At this point, to be safe, it's a good idea to reboot into Windows XP to allow the system to check everything has been reorganised correctly. If it's working fine, boot back into the installer and complete the Ubuntu installation onto your free partition. Then each time you boot you'll receive the choice of OSes.

If you later decide you don't need Windows XP, just run the installer again and use the partition tool to erase XP. You can then format that free space and use it as extra Ubuntu storage.

## "Most software that runs in Windows XP should also work in Windows 8"

data onto the new operating system.

Again, there's an Upgrade Advisor tool that you can use to check that your hardware and peripherals are all compatible with Windows 7: you can download it from <http://tinyurl.com/nkxpxmq>.

### SWITCHING TO LINUX

If you bought your PC back when Bill Gates was still running the show, a modern edition of Windows might be too much for its creaking platters. In the Linux world, however, hardware requirements have remained low over the past decade. The latest release of Ubuntu (version 13.10) requires only a 700MHz Celeron processor, 512MB of RAM and 5GB of storage space, along with a video card capable of displaying a 1024 x 768 resolution. Linux Mint 15 goes even lower, supporting 800 x 600 displays. To put that into context, Intel first introduced a 700MHz Celeron processor in 2000, and 512MB of RAM became the industry standard for new PCs only a few years later.

This means any PC that came preinstalled with XP is likely to be able to run these Linux distros – although if you upgraded to XP from Windows ME or 2000, you might want to look into something lighter, such as Ubuntu.

Although your PC may meet the minimum specifications, it isn't guaranteed that all your hardware will work right away: you may need to hunt for Linux drivers for your ageing components. Some manufacturers are better than others when it comes to Linux support. For example, Nvidia

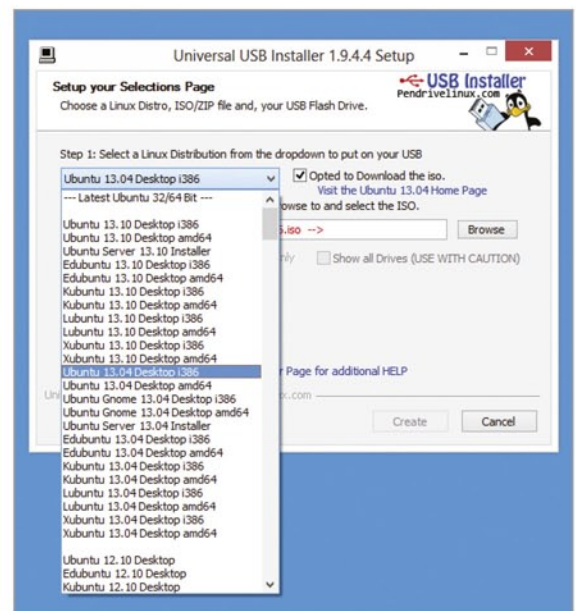
PC has USB 1.1 ports, running an operating system from a USB drive is likely to be very slow, so consider burning the ISO to a CD instead.

If you do need extra drivers, it's a good idea to download them to a USB stick before you begin your migration – especially network drivers, since you'll be stuck without them. If you can't find what you're looking for on the manufacturer's site, search around for open-source drivers; there are communities dedicated to the issue.

When it comes to applications, your XP software naturally won't work on Linux; there are alternatives to almost every major application, however, and the situation is getting better with every passing year. Ubuntu comes bundled with the latest version of LibreOffice, which can open and edit Microsoft Word, Excel and PowerPoint files. If that won't cut it, you can download the latest version of Chrome or Firefox and log into Google Drive or Microsoft Office Web Apps.

If there's a particular application you can't do without, and can't adequately replace, you can use the free VirtualBox host to virtualise XP in your new Linux installation. Alternatively, you can keep your old XP installation on your hard disk, so you can boot into it occasionally when needed. A dual-boot configuration will take up much more storage space than picking one or the other, so whether or not it's practical will depend on the size of your hard disk, but if you have the room it's a viable way to transition – even if only for a short time while you're

▼ Free tools can help you create a USB-based Linux installer, so you can conveniently try out a free OS



## XP MODE IS YOUR FRIEND

The Professional, Enterprise and Ultimate editions of Windows 7 feature XP Mode, for running troublesome applications that won't work in the newer OS. It isn't installed by default, however: you'll find the instructions for downloading and installing the required software at <http://tinyurl.com/yapvreg>.

To use it, you'll need a processor that supports hardware virtualisation – you can check this using the free utility in the “Before you begin” section. Then, follow the installation procedure for both XP Mode and Virtual PC in the “Installing and using Windows XP Mode” section.

Once that's all done, you can run Windows XP Mode by selecting it from the Windows 7 Start menu (it's in the Windows Virtual PC folder). On first use, you'll need to accept the licence terms, choose a storage location for all of your XP files, give XP Mode a password, and decide whether to enable automatic updates. Then click Start Setup to open XP Mode in its own window. From here, you can install and run programs as if you were on an XP machine, before closing the window to return to Windows 7.

XP Mode comes with one big caveat: support ends at the same time as support for Windows XP, so security updates will stop in April 2014. What's more, there's no

► You can quite easily set up a virtual XP environment using VMware Player



antivirus protection while in XP Mode, although you can install security software within the XP Mode virtual machine. For these reasons, it's best to use XP Mode only for old offline applications that won't run natively in Windows 7. Don't use it for web browsing and other daily activities.

If you're using Windows 8, or a different edition of Windows 7, XP Mode isn't included – but it is possible to set up a virtual XP environment yourself. VMware

Player is ideal; download it free from [www.vmware.com/products/player](http://www.vmware.com/products/player). Install the software, create a new virtual machine and install XP from your original installation disc or ISO image. Once that's up and running, click the Player menu and select Unity Mode, which allows XP applications to run directly on the Windows 8 desktop. Move your mouse to the bottom-left corner to bring up the menu and access the applications on your XP installation.

## STICKING WITH XP

In some circumstances, moving away from XP may not make sense. Perhaps you know there's a new fleet of office hardware on the way, but not until next year; or maybe the PC is used by someone who won't be able to learn another interface and a new way of doing things. Sticking with XP after support ends should really only be a last resort, but if you need to, then there are steps you can take to make yourself as secure as possible.

First, you should already be on Service Pack 3, and make sure you get every single available update from Microsoft – important, recommended or otherwise – before they stop coming in April. Many malware and hacker attacks exploit vulnerabilities that have in fact already been patched, so staying as up to date as possible can reduce your exposure.

Next, make sure you're protected with security software. Microsoft offers a Windows XP version of Microsoft Security Essentials (<http://tinyurl.com/aakal9b>), but you should consider a third-party security suite such as the A-Listed Avast 2014 ([www.avast.com](http://www.avast.com)): it's free and, in the PC&TA Labs, it proved more effective than Microsoft's own tool at intercepting threats. Set it to update itself automatically and run a regular full scan, and make sure that all useful features are enabled; tools such as automatic web page and network scanning provide a valuable extra layer of defence.

If your PC is connected to the internet via a router, this will automatically provide a degree of protection against intruders. If your router has a built-in firewall, make sure it's active, and check Windows' software firewall is enabled:

it should be turned on by default in SP3, but if not, go to Network And Internet Connections in the control panel, then click “Set up or change your home or small-office network”. Follow the steps to turn on the firewall.

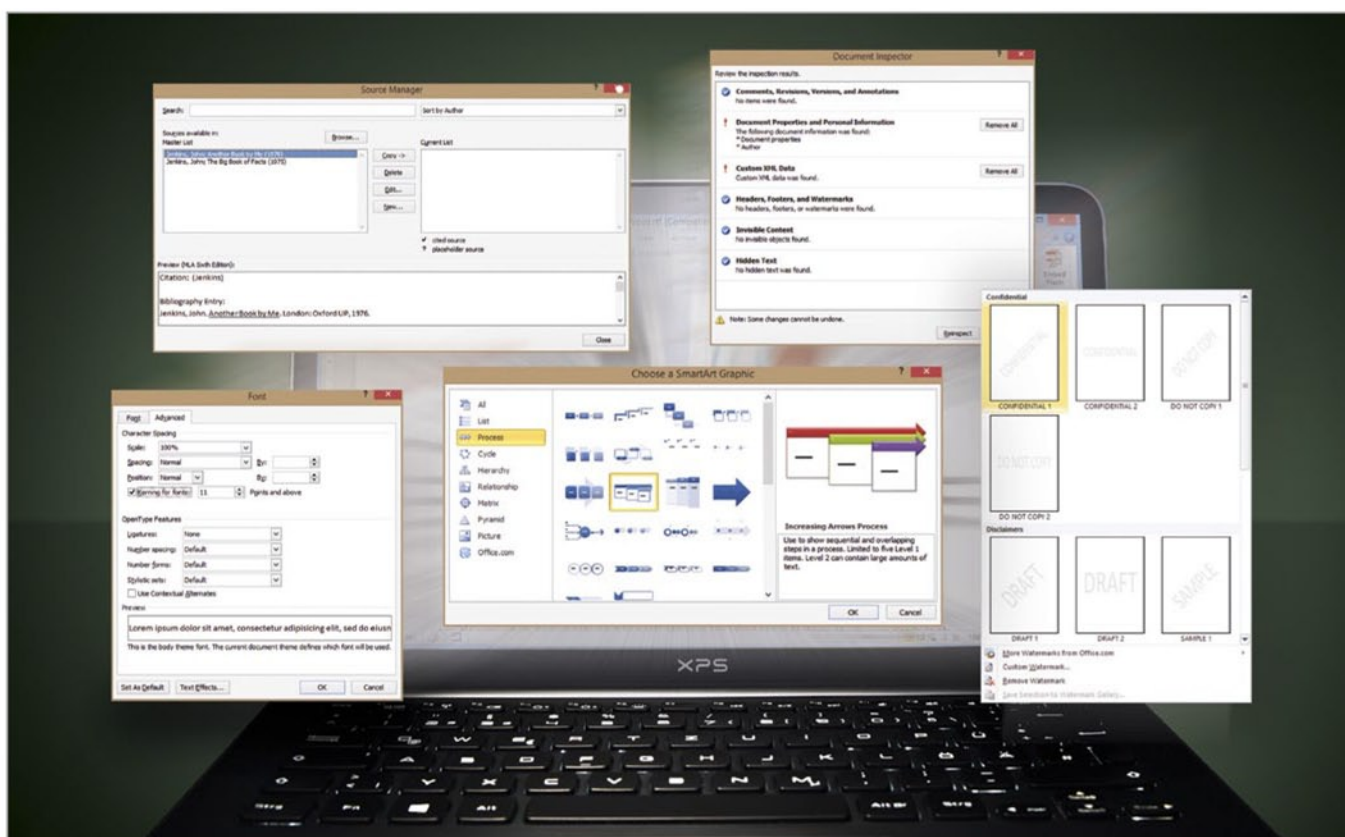
These measures will afford you some degree of protection, but ultimately you'll still be at risk. If you really want to minimise the danger of running an unsupported Windows XP system, your best bet is to keep it entirely away from the dangers of the internet. Once you have everything patched, disconnect your Ethernet cable, use USB sticks to transfer trusted files to and from newer computers, and consider your XP machine an offline-only tool.

It's a drastic step in today's always-connected world, but it's the only way to keep enjoying Windows XP with confidence.



# HOW TO: 20 features you've never used in Word

**DARIEN GRAHAM-SMITH** DELVES INTO THE RIBBON INTERFACE TO FIND THE MOST USEFUL HIDDEN FEATURES IN MICROSOFT'S WORD-PROCESSING PROGRAM



Favoured by students and CEOs alike, Microsoft Word is one of the most widely used pieces of software in the world. And when it comes to bashing out everyday documents and the odd poster, there's rarely much need to venture beyond the Home tab.

If you explore the interface, however, you'll find a wealth of lesser-known features – tools that are easy to use and which could save you considerable time and effort – tucked away, waiting to be discovered.

On these pages, we outline our top 20 easily overlooked features in Word. Many of them have been in Word for a decade or more, and can be found in the menus of Word XP and Word 2003, but we'll focus on the ribbon interface

from Word 2007 and above, which was, after all, invented to help users find the software's more esoteric features.

## 1 SELECT SIMILAR FORMATTING

In an ideal world, every element in your document would have a style assigned to it. But if you've relied on local formatting, it's still easy to make global changes. The Editing section, at the far right of the Home tab, includes the handy option to "Select all text with similar formatting". This lets you easily highlight all your ad hoc headings, captions and so forth at once and tweak their appearance in a single swoop – or apply a style for easier management in the future.

## 2 CLIPBOARD PANEL

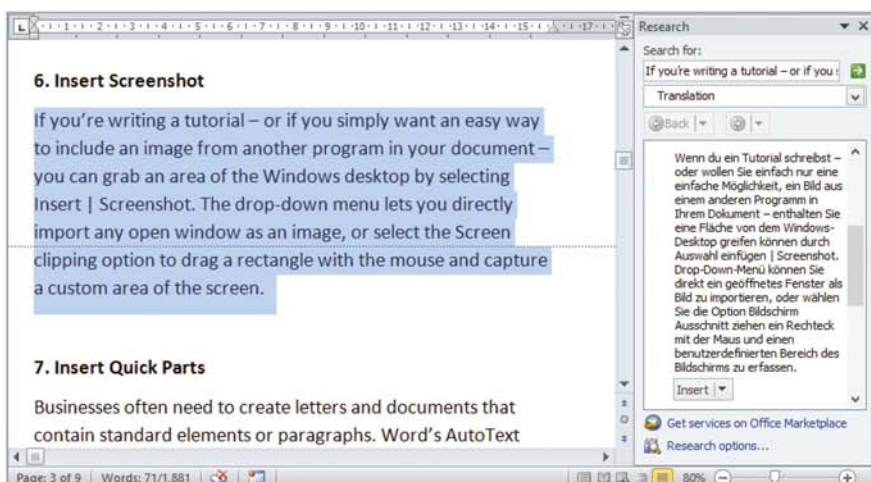
The clipboard panel offers a convenient way to keep more than one element on your clipboard at once. Click the tiny pop-out icon within the Clipboard section of the Home tab to open it. Up to 24 recent cut and copy operations are remembered, and you can click on any one of them to paste it at the insertion point. The Options dropdown at the bottom lets you control when the Clipboard panel appears; one option is to make it appear when you press Ctrl+C twice.

## 3 KERNING

Professional desktop publishing software supports kerning – that is, the adjustment of the spacing between characters – to make







▲ The Translate tool sends your document's text to the Microsoft Translator web page

**12 WATERMARK** When you're circulating a draft of a document, or sharing something private with a work colleague, it's useful to be able to watermark the page so you can see at a glance what type of document it is. The Watermark dropdown, under the Page Layout tab, lets you add a large grey watermark saying "DRAFT", "CONFIDENTIAL" or "URGENT" in two clicks. Select Custom Watermark to place your own text or an image.

**13 CUSTOMISE RIBBON** The ribbon interface was designed to be more stable than the highly customisable Office 2003 interface. However, if you select File | Options | Customize Ribbon, you can add new functions to it, and remove ones you don't want to see. You can add features that aren't normally exposed at all – there's a helpful selection of "Commands not in the ribbon" – and even create your own tabs. If that's too complicated, you can customise the Quick Access toolbar that appears at the top of the screen by using the tiny dropdown arrow at its right end.

**14 CITATIONS** For academic works, Word can also help you manage your citations. On the References tab, you'll find a button to Manage Sources; here, you can enter the details of each work you refer to, then insert references to them by clicking the Insert Citation dropdown. You can choose a citation format from 14 recognised styles, including APA and MLA standards, and at the end you can generate a bibliography with one click.

**15 HYPHENATION** Allowing the odd word to spill across two lines can improve the appearance of your document. It can keep your right margin from becoming too ragged or, in fully justified text, it can prevent large "islands" of white space from appearing between each word. Word can automatically hyphenate words as needed, but the feature is turned off by default: to enable it, go to the Page Layout tab and select Hyphenation | Automatic.

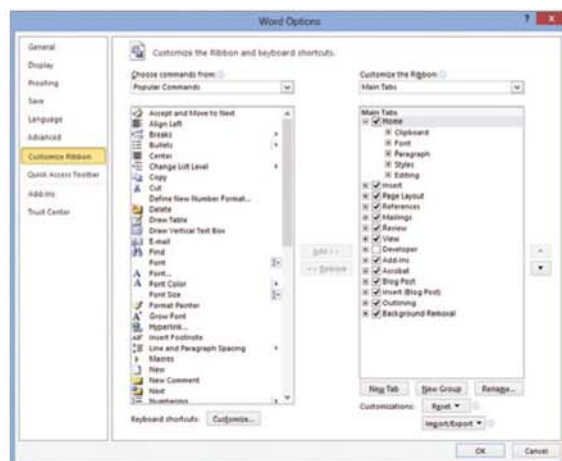
**16 TRANSLATE** Word's Review | Translate function sends the text of your document to the Microsoft Translator web page and displays a translation in a browser window. In Word 2010 and 2013, you can also activate Review | Translate | Mini Translator, which presents a ghosted tooltip when you hover over a selected passage of text; move your pointer onto it to see a pop-up translation in your selected language. There are dozens of languages to choose from: browse them by selecting Choose Translation Language from the Translate dropdown.

**17 PAGE COLOR** If you want your document to stand out, you can use the Page Layout | Page Color dropdown to apply a background wash; select Fill Effects and you can add patterns and textures. Fills and patterns are automatically applied to all pages of your document. Also, although you can see them onscreen, they're not printed, so they won't interfere with the readability of your hard copies.

**18 OUTLINE VIEW** If you're using Word for a large project, such as a university dissertation or a novel, it can be helpful to divide the document into sections and subsections. Go to View | Outline to access a hierarchical display that lets you mark up headings and collapse the body text under them; this gives you a clear overview of your document, which can be effortlessly reorganised by moving sections around. You can also collect several documents into one master project: click Show Document in the Master Document section of the Outlining tab to import or create subdocuments.

**19 INSERT INDEX** A third useful feature for longer works is the ability to automatically generate an index. To use this feature, you must first mark your references in the text by selecting the relevant word or phrase, then clicking References | Insert Index. When you've marked up all your headwords, click Insert Index to create an index. This will contain references to the instances you've marked, and self-updating links to the page numbers on which they appear.

**20 COMBINE AND COMPARE DOCUMENTS** Word can automatically compare or combine two documents: you'll find the tool under Review | Compare. If you prefer to do the job yourself, click View | View Side by Side; this will automatically position your documents next to each other at identical zoom factors, so you can easily look back and forth between them. If you click the Synchronous Scrolling button, they'll even scroll up and down in lock-step when you move the cursor around or drag the scroll bar.



▲ Not happy with the options in the ribbon? Then customise it

**HOW TO:****20 Photoshop features you've never used**

**DARIEN GRAHAM-SMITH** EXPLORES POWERFUL BUT LITTLE-KNOWN FEATURES IN ADOBE PHOTOSHOP THAT YOU MAY HAVE MISSED

**A**dobe Photoshop offers such a broad range of tools that it can be bewildering. Even experienced users of the software probably aren't fully familiar with all of its menu options and controls. We've compiled a list of 20 of the most useful features tucked away in Photoshop, which can save you considerable time and effort, and give great results with no fuss.

In many cases, these features offer a wide range of options and settings that we don't have space to cover in full, so for each one we've also provided links to Adobe's own documentation so you can learn more. The good news is that most of these features are available even in older editions of Photoshop, with some of them dating back to version 3 of the software, which was released in 1994. We've indicated the version of the software in which each feature made its debut.

## 1 PUPPET WARP (CS5)

Puppet Warp lets you reshape or distort an image element by creating a "skeleton" for it, which can then be dragged around or transformed to give the element a new pose. Here's how it works: if you want to move a person's arm, first copy them onto a new layer, and cut around their body so the rest of the layer is empty. You don't have to trim precisely around the body - just cut away unneeded elements. Then select Edit | Puppet Warp to make Photoshop create a mesh, then click to "pin" parts of it in place. You can now drag the pins around to your heart's content to change your subject's pose. You can fine-tune adjustments as much as you like, and optionally create a hierarchy of pins - to determine which bits of the mesh move with which others - via the options bar. More details: <http://tinyurl.com/mz8qxr>.



▲ The Puppet Warp tool lets you rearrange your subject's limbs

## 2 CONTENT-AWARE SCALE (CS4)

Content-Aware Scaling lets you change the shape of an image without distorting its contents or cropping important features. Start by selecting what you want to scale (if nothing is selected, the whole layer is affected); then select Edit | Content-Aware Scale and drag the handles to recompose the image. Photoshop tries to trim away unimportant detail: if it gets it wrong, you can specify what should be protected by masking it on an alpha channel and selecting this channel from the Protect dropdown in the options bar. Click the person icon to always protect skin tones. More details: <http://tinyurl.com/668yx3c>.

## 3 LAYER STYLES (6)

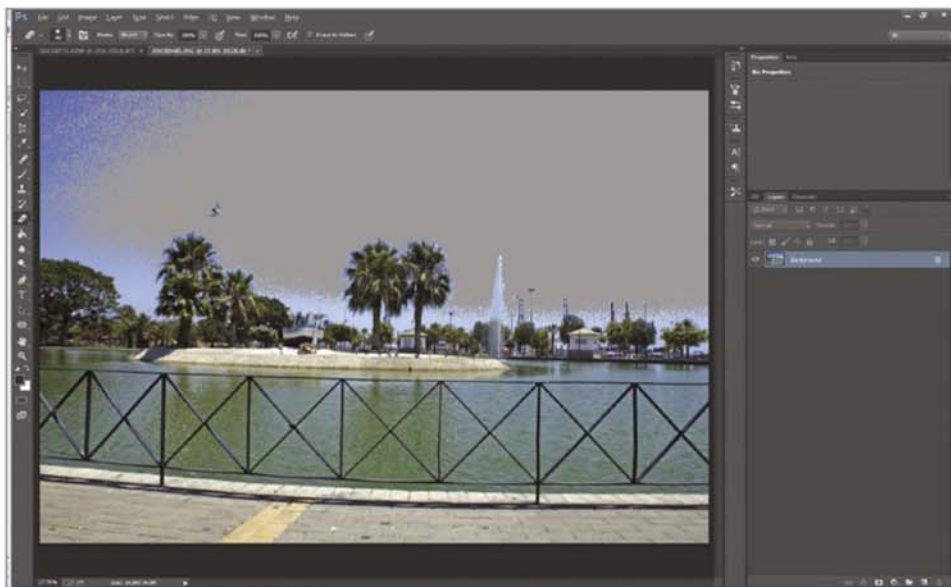
A layered approach makes it a piece of cake to create drop shadows, halos, embossing effects and similar stylings. The interface is hidden away, though: to find it, put the content you want to style on its own layer, then double-click in the blank space to the right of that layer's

name in the layer list. The Layer Styles window opens, letting you apply 12 types of non-destructive effect to your content. More details: <http://tinyurl.com/bos9ddo>.

## 4 3D (CS3 EXTENDED)

Photoshop can open 3D files in a variety of formats, including 3DS and Google Earth KMZ files. Each 3D object sits on its own layer, and can be moved, rotated and scaled via the 3D panel (Windows | 3D). You can also extrude 2D objects into 3D meshes, a technique called repoussé in older versions of Photoshop. To do this, pick the area you want to convert and select 3D | New 3D Extrusion from Current Selection (alternatively, you can extrude a whole layer). You can adjust its appearance in the 3D and Properties panes, and move it around in 3D space with the option bar. You can also distort and transform 3D objects. More details: <http://tinyurl.com/qb2vfhu>.





## 5 ADJUST VIBRANCE (CS4)

Adjusting the saturation of an image can often make already bright areas look too garish. Try Image | Adjustments | Vibrance instead: this "smart" colour adjustment pumps up areas of low saturation without pushing richer colours to unrealistic extremes. It's designed to have only a subtle effect on skin tones, too, so you won't end up with a radioactive face. The dialog has its own saturation slider, so you can balance the two to get the perfect colouration. More details: <http://tinyurl.com/qeh7ugm>.

## 6 PROOF COLORS (5)

When View | Proof Colors is ticked, Photoshop tries to display your image as it will appear in your chosen colour profile, rather than as it would look by default on your monitor. This can be helpful if you're working with images for print: select View | Proof Setup | Working CMYK, and Photoshop will simulate a CMYK representation of your image, while allowing you to keep working in RGB mode. Activate View | Gamut Warning and colours that can't be rendered in the selected profile will be marked in grey, so you can correct them by hand. Otherwise, when you convert the image to CMYK, these colours are recoloured to the nearest in-gamut shade. More details: <http://tinyurl.com/8haz42a>.

## 7 CAMERA RAW FOR JPEGS (7)

Photoshop's Camera Raw importer isn't only for raw files - it works with JPEGs and TIFFs, too. Some versions of Photoshop offer

it under the Filter menu. Otherwise, select File | Open As... and choose Camera Raw as the image type (or right-click in Bridge and select Open In Camera Raw). Camera Raw offers some handy tools that aren't in the main Photoshop interface, including the Clarity slider towards the bottom of the main view; the White Balance tool for fixing unwanted colour casts; and Noise Reduction sliders for removing speckles and blotches from your images. More details: <http://tinyurl.com/om278t8>.

## 8 HDR PRO (CS5)

Photoshop can combine a series of photos taken with different exposure settings into one high-dynamic-range (HDR) image. Select File | Automate | Merge to HDR Pro... to open the file import dialog. Choose two or more images to combine, then click OK to open the HDR Pro window. Here you can choose from 16 preset algorithms - the "Scott5" setting gives the sharp, high-contrast results many photographers seek. Or, you can adjust the settings yourself. A checkbox lets you remove "ghosts" if something moved between shots. More details: <http://tinyurl.com/om278t8>.

## 9 VARIABLES (7)

Variables can help you create multiple variations of an image. Start by creating your base image, putting the variable element on a layer of its own. Then select Image | Variables | Define and select whether you want the layer's visibility to change, its contents to change (Pixel Replacement), or both. Finally, click onto the Data Sets tab and set a state

for your Variable layer. You can now switch between states by selecting Image | Variables | Apply Data Set. You can export a set of files, corresponding to the datasets you've created, using File | Export | Data Sets as files. It's also possible to create datasets in Excel or Notepad and import them in CSV format. More details: <http://tinyurl.com/672fhla>.

## 10 COPY MERGED (3)

This is a simple trick, but it's still easy to overlook. When copying and pasting, select Edit | Copy Merged - or hold down Shift while pressing Ctrl+C - to copy everything that you can see inside your selection area to the clipboard, rather than just what's on the currently active layer. More details: <http://tinyurl.com/nnahf2a>.

## 11 PASTE IN PLACE/ INTO/ OUTSIDE (3)

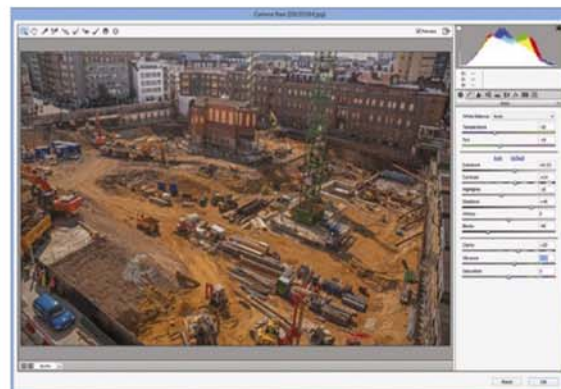
You'll find these options under Edit | Paste Special. Paste In Place draws the content of your clipboard onto a new layer at exactly the same position as you copied it from - useful for "backing up" parts of an image. If you want it to go somewhere else, you can select an area of the image, then select Paste Into: this centres the pasted image on your selection, and creates a layer mask around your selected area to conceal any overspill. Paste Outside does the same thing, but only the portion outside of your selection is visible. More details: <http://tinyurl.com/nnahf2a>.

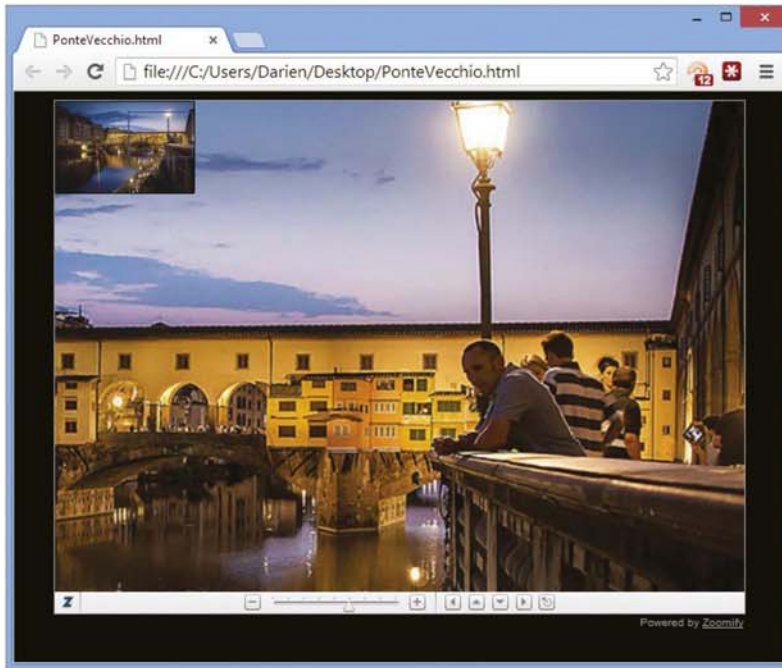
## 12 EDIT BRUSHES (7)

When you're using a brush tool (such as the paint brush, clone stamp or eraser), you can make the brush smaller and larger by tapping [ and ], and make its edges harder or softer by holding down shift and tapping { and }. For more advanced control, click the tiny folder icon in the

▲ The Gamut Warning option lets you see when parts of your image can't be properly rendered in a particular colour space

▼ Despite the name, the Camera Raw module also works with JPEGs





▲ The Zoomify picture viewer gives you an easy and safe way to share your high-resolution images with the world

options bar along the top of the screen, or select Windows | Brush to open the Brush panel. From here you can customise every aspect of your brush, including its shape, texture, noise, smoothing and many more properties. More details: <http://tinyurl.com/p98dnxm>.

## 13 HISTORY BRUSH (7)

If you make a mistake in editing, and realise only after you've made several other edits, there's no need to step back through your whole history. Open the History panel (Windows | History), then click the small box to the left of a previous state to set it as the source for the History Brush. Now use the History Brush tool to paint over the areas you want to restore. The Art History Brush works in the same way, but paints in stylised ways, according to your settings in the options bar. More details: <http://tinyurl.com/ngdxnru>.

## 14 PERSPECTIVE CROP (CS6)

If a photo isn't quite dead on, you can crop and straighten it in one go. Hold down the mouse button on the Crop tool to select the Perspective Crop tool; now drag a rectangle - or draw one with four clicks - then drag its corner points to mark out the area that should be square. Click the tick in the options bar (or double-click inside the crop area, or press Return) and the marked area will

be transformed to fill the frame. More details: <http://tinyurl.com/ngdxnru>.

## 15 SMART OBJECTS (CS2)

You can import any image as a Smart Object (File | Open as Smart Object), or convert any layer to one (right-click on the image and select "Convert to Smart Object"). You can't directly edit the pixels of a Smart Object, but you can apply any number of transformations to it, and Photoshop will calculate the end result non-destructively from the original full-resolution image. You can also apply filters non-destructively from the Filter menu; these will appear in the layer list and can be tweaked and turned on and off at will. More details: <http://tinyurl.com/a78wfy2>.

## 16 QUICK MASK (7)

To activate the Quick Mask, hit Q, or click the Quick Mask icon on the toolbar, beneath the foreground/background colour swatches. Now, where you paint or draw in black, the canvas is marked in red. When you press Q again (or click the icon again), all non-red areas turn into a selection area. While in Quick Mask mode, you can use selection and fill tools to add areas to your mask; use the eraser or paint white to remove areas from the mask; and use soft-edged brushes to create feathered selections. More details: <http://tinyurl.com/o52ftxp>.

## 17 ACTIONS (4)

The Actions panel offers a set of predefined macros, and you can add your own by clicking the Create New Action button. Once you've given your new action a name, Photoshop will record the adjustments and operations you carry out until you click Stop. You can replay the process at any time by selecting its name and clicking the Play button. If you have a folder full of files that all need the same treatment, the File | Automate | Batch... dialog can automatically open each one, apply a specified action, and save and close the file afterwards. More details: <http://tinyurl.com/ldvf8vd>.

## 18 PHOTOMERGE (CS)

If you want to turn a series of overlapping photographs into a panorama, you'll find the option under File | Automate | Photomerge. Select your files, then choose a merge type and click OK. Photoshop aligns and combines them into a single composite image. If the images have significant distortion - for example, if they were shot at a short focal length - tick "Geometric Distortion Correction" to automatically compensate for it. More details: <http://tinyurl.com/28fpcaw>.

## 19 VIDEO (CS6)

Recent versions of Photoshop support video as well as images. You can open video clips in the same way as images, and move between frames via the Timeline panel. It's possible to paint onto individual frames, and use Adjustment layers to apply enhancements and corrections to the whole file. When you're finished, select File | Export | Render Video - but be warned, rendering the file may take minutes or hours. More details: <http://tinyurl.com/a7c4yod>.

## 20 ZOOMIFY (CS3)

Sharing large images on the web can be tricky. A shrunk-down version won't show off the full detail, but a high-resolution one won't fit comfortably in a browser window. File | Export | Zoomify produces a snippet of web code that presents your image within a Zoomify-branded image viewer, allowing the visitor to pan and zoom around your image within a convenient viewport. Naturally you can embed this into your own web pages for free, allowing convenient presentation of your images. More details: <http://tinyurl.com/lup8lsv>.



# HOW TO: Manage your time with Google Calendar

**DARIEN GRAHAM-SMITH** EXPLAINS HOW TO GET THE MOST OUT OF CALENDAR – AND THE THIRD-PARTY APPS THAT MAKE IT MORE POWERFUL

**T**oday's smartphones and tablets offer organisational capabilities that put the humble Filofax to shame. Yet, somehow, we seem no more in control of our timekeeping than we were in the 1980s, when those glorified ring binders were the new kids on the block.

That's because it takes time and effort to set up and maintain your digital diary. It doesn't have to be difficult, though. There are hundreds of mobile apps, web services and desktop programs that can help you get more organised, and thousands more that integrate with them.

For our purposes, we'll focus on Google Calendar, as it's sophisticated, widely supported and free. We'll show you how to easily manage events and reminders, work with multiple calendars and integrate with third-party apps to create to-do lists, send custom notifications directly to your phone or tablet and much more.

## GETTING THE MOST FROM GOOGLE CALENDAR

First released in 2006, Calendar has matured into a well-featured, easy-to-use service designed to work alongside other Google offerings. To use it, you need nothing more than a Google account and a browser (or smartphone app). No training is required, since it's highly intuitive.

To add an event, simply select a view (day, week or month), click on a date (or press Q for Quick Add) and enter the details. You don't need to do this in a specific format: you can type a natural-language description of your event, such as "Meeting at 4pm tomorrow".

Calendar can make sense of entries like this as long as they contain elements it can interpret as "what" and "when" – in this case "meeting" and "4pm tomorrow". Optionally, you can include who the meeting is with and where it's taking place, or expand



the "when" parameter to include the length of the appointment.

You don't need to add additional details in any particular order: for example, you might type "Dental appointment at Church Street Medical Centre, 4pm next Monday for 45 minutes". If you wanted to mark out a chunk of your schedule to attend a conference or go on holiday, you can

or smartphone to create diary entries in a similar way. For example, say "Schedule a meeting with John from 4 to 4.45pm tomorrow" and a card will appear asking you to confirm before adding the appointment. However, Google Now is fussier than Calendar about how you frame your sentence – you need to stick to this template – so it can be frustrating to use.

## "Calendar can make sense of entries as long as they contain 'what' and 'when' elements"

do this by typing "BETT 22/1/2014 - 25/1/2014". You can even add recurring events so, if you were particularly unfortunate, you might type "Dental appointment next Monday 4pm repeats weekly for 4 weeks".

This approach doesn't work with the Calendar smartphone app, but you can use Google Now on your tablet

## REMINDERS

It's easy to update your calendar, but that's only half the job – you still have to remember to keep the appointments you've entered. Calendar can automatically send you an email or display a pop-up reminder at a set time ahead of the event, but these are easy to miss.

To receive a reminder you're more likely to notice, enable SMS notifications by clicking the cog at the top right of the main Calendar view and selecting Settings. Choose the Mobile Setup tab and enter your phone number into the box. Click Send

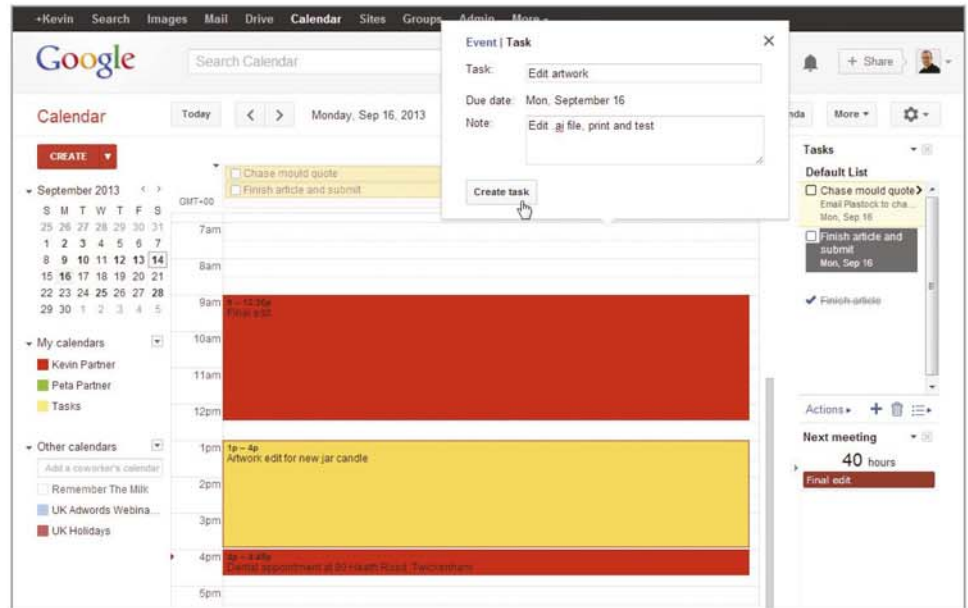
Verification Code and, once it's arrived, enter it in the appropriate field. You'll now be taken automatically to the "Reminders and notifications" page, where you can enable SMS as your default notification method. In most cases, you'll want the flexibility to decide this on an event-by-event basis; otherwise, you might find yourself swamped by texts.

## MULTIPLE CALENDARS

One Google account can have multiple calendars. You might take advantage of this feature to separate your work meetings from medical appointments, for example. You can also subscribe to public calendars, and view those of your colleagues and friends, if they choose to share them with you.

This is convenient, but it raises the possibility of inadvertent over-sharing. If you work in an organisation that uses Calendar, it's a good idea to create a private one for yourself, and make sure the "Share this calendar with others" box isn't ticked, so your colleagues don't see private details of your comings and goings.

You should also be aware that when you create an appointment via Google Now, it's entered into your default calendar – the first one created when you signed up. It makes sense for this to be private and unshared if there's any possibility you'll add personal appointments to it.



▲ Calendar combines scheduling and task management to make a powerful organisational tool

## INTEGRATING WITH OTHER APPS TO GET THINGS DONE

So far, we've talked about adding events directly. This works well if, for example, you're in a meeting and agreeing the date of the next one; you can easily add it directly, or bark the details into Google Now. But what if you need to check or update your schedule while working in another application? For example, you may want to check and record dates while writing emails or taking notes in a presentation. Fortunately, Google's open API and its enthusiasm for merging its products makes all this – and more – possible.

If you're a Gmail user, displaying your calendar alongside your inbox couldn't be easier. In Gmail, click the settings cog in the top-right corner, choose Settings, then click on the Labs tab. Scroll down to the "Google Calendar gadget" and select Enable. You'll now see a box in the left-hand column, beneath your folders, that lists your upcoming events. (If you have Chat enabled, you'll need to click the ellipsis at the bottom of the column to view "Gadgets".)

If you prefer to focus on a task list rather than your entire calendar, Google Calendar lets you create tasks and assign completion dates to them. But if you're looking for a general to-do list, check out Remember The Milk. This free, cross-platform tool works on Android, iOS and the web, and integrates with a variety of third-party platforms, including Gmail and Calendar. To get started, visit [www.rememberthemilk.com](http://www.rememberthemilk.com) and go

through the sign-up process.

Once you've created your account, click on the Apps tab on the website; you'll see options for adding your task list to Gmail, Calendar and other services. Click "Remember The Milk for Google Calendar" and you'll see two options: a "Daily Gadget" that shows a list of tasks assigned to each day, and a "Sidebar Gadget" that presents a summarised view of your to-do list. Choose one, then click the Calendar button and follow the prompts to add the gadget.

When it comes to presentations and meetings, Calendar can be integrated with Evernote (<http://evernote.com>), a powerful note-taking service that offers mobile apps and browser-based clients and synchronises across your devices. The app doesn't include a diary system, but you can easily book appointments and block out time from within Evernote via the free CloudWork intermediary service (see the walkthrough on p96).

Another service that can help you stay on top of your day is Pushover (<https://pushover.net>). Even if you've activated SMS notifications, you can easily miss the standard Calendar reminders; Pushover is a mobile app that gives you more control over notifications, including how loud and persistent they are. The client costs a few dollars for a lifelong licence, and once you've registered you can set up your device to handle reminders in whatever way you like: you can choose different sounds and behaviours for standard notifications, and more noticeable alerts for urgent messages. Pushover doesn't automatically

## Labs features: Next Meeting



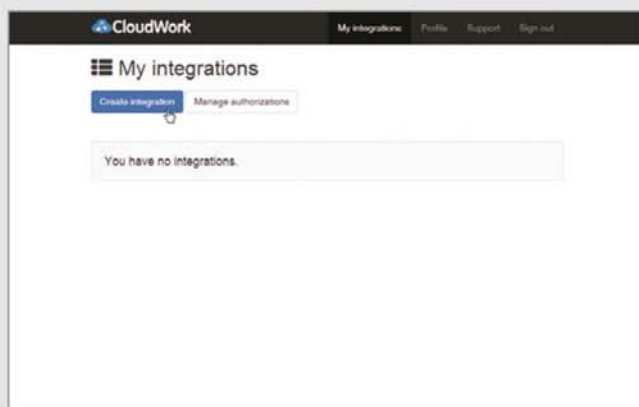
Calendar supports a host of experimental features under the Google Labs umbrella. These aren't guaranteed to work perfectly – in Google's own words, they can "change, break or disappear at any time" – but if you'd like to try them out, click the cog in the top-right corner and select Labs to view the available features.

One of our favourites is the Next Meeting feature, which adds a prominent box to Google Calendar so you can see your next appointment at a glance. To enable it, scroll down the Labs list to "Next Meeting" and click Enable. If you never miss your next meeting, you'll never miss a meeting at all.

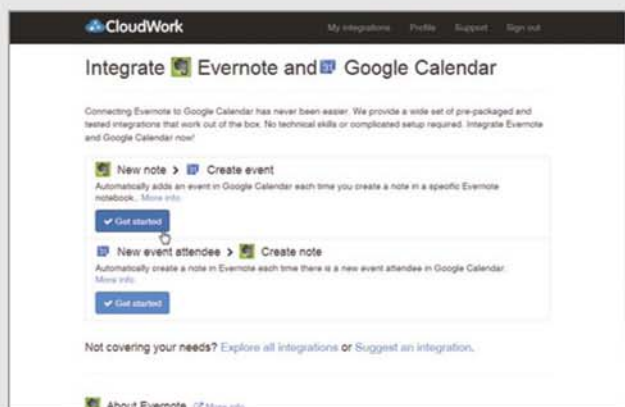
Other Labs features let you keep track of times across multiple time zones, add icons to events, attach documents to calendar entries and add wallpaper to your calendar view.



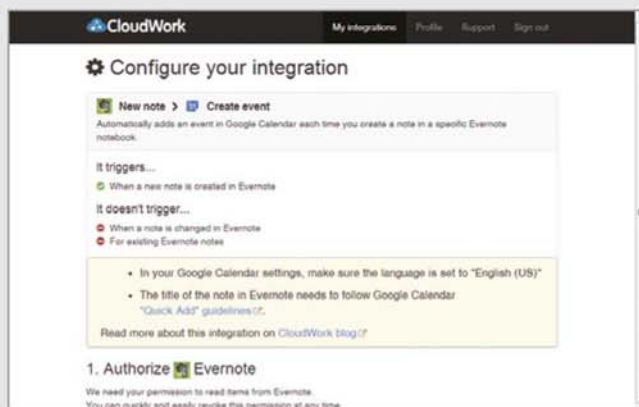
## Use Evernote to create Google Calendar events



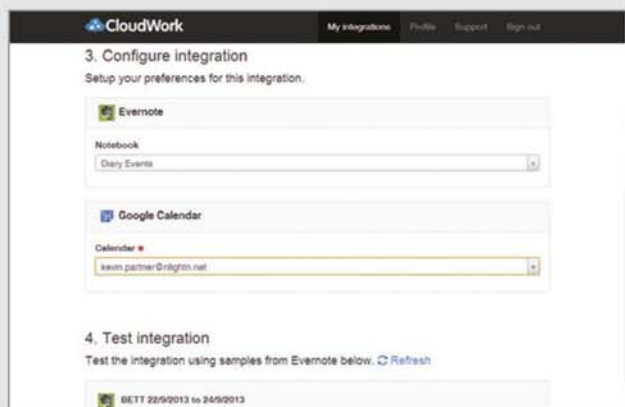
**1** Integrating Evernote with Calendar lets you add events and block-book time without leaving the Note view. First, sign up for a free account with CloudWork (<https://cloudwork.com>). Then, create a new note in Evernote with a title in Calendar's Quick Add format. Click "Create integration" from CloudWork's My Integrations view.



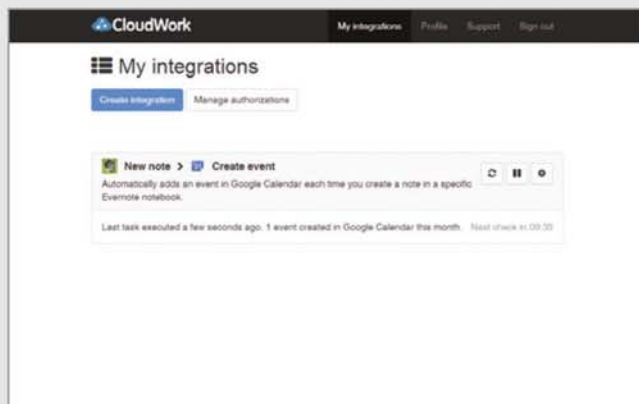
**2** From the list of apps, select Evernote. CloudWork will now present a list of integration options for this app; select Google Calendar from the list. Cloudwork offers two integration options for Evernote; in this case, we want to create an event, so select the top option and click "Get started".



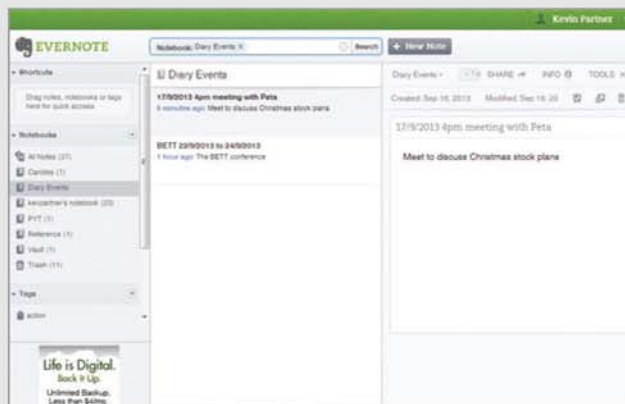
**3** Now, you need to give CloudWork permission to access your Evernote and Calendar accounts. Do this by clicking "Authorize" from the "Configure your integration" page. Each button generates a pop-up that asks you to confirm the access you're granting. You can revoke access at any time within Evernote, Google or CloudWork.



**4** Select the notebook and Calendar you want to use for your integration. CloudWork will now attempt to access your notebook and pull out qualifying entries; you should see the one you created in Step 1. Click "Send to Google Calendar", then check it correctly creates an entry. If it does, click "Create integration".



**5** You'll now be returned to the My Integrations page – where you should see your integration listed. If it tells you it's paused, wait a few seconds and reload the page. Now, go into Evernote and create another new note with a Quick Add-formatted title. Come back to My Integrations and click the refresh button; it will check for new notes.



**6** CloudWork will check for new Evernote notes in your selected notebook every ten minutes and, if they conform to the Quick Add format, generate a Calendar event. This is a convenient way to assign time to a task as you're making a note of it. Once you've got the hang of it, check out the other integrations CloudWork offers.

integrate with Calendar, but you can easily make it do so using the third-party service IFTTT (<https://ifttt.com>).

## KEEPING TRACK OF APPOINTMENTS WITH IFTTT

IFTTT - short for "If This Then That" - is a free service that can monitor your online services and trigger actions when specified things happen. Once you've created an account, it's easy to create a script (which IFTTT calls a "recipe") to connect Calendar to Pushover.

To do this, click My Recipes | Create A Recipe. Click the blue underlined "this" and choose Google Calendar as the "Trigger Channel". You'll now be asked to authorise IFTTT to access your Calendar account; once this is done, you can choose the "Event from search starts" option. This triggers an action if it finds a specific phrase in a current appointment. Enter a keyword such as "#remindme" here - we're going to set up IFTTT to generate a Pushover notification whenever a Calendar event containing this keyword is about to start.

Once you've created this trigger, click the blue, underlined "that", choose Pushover, enter your login details, select "Send a high-priority notification" and click Create Action. If you've set up Pushover correctly on your mobile device, this will override any "quiet" settings, so use it with care. You should also select a particularly insistent notification sound from the list.

Now it's time to test the system. Pop back to Calendar and create an event that starts in five minutes' time, making sure you put your keyword in the title. You can either wait a few minutes for IFTTT to pick up the

event, or you can go to Edit Recipe in IFTTT and click the Check button to test it immediately. If you've set up everything correctly, the notification should pop up on your phone or tablet.

If you wish, you can now create additional recipes to handle low-priority calendar alerts and as many other types of notification as you like. You can also assign notifications to specific sorts of email, which is useful if you're awaiting a critical message from a client but are away from your desk.

If you use Gmail, you can use IFTTT's Gmail channel to create a recipe that triggers an action when a message from a particular sender arrives, or when an email contains specific text. If you use a different email service, you'll need to set up a rule within that service so it forwards the email in question to [trigger@ifttt.com](mailto:trigger@ifttt.com) with a tag you select, then use IFTTT's generic email trigger to activate Pushover.

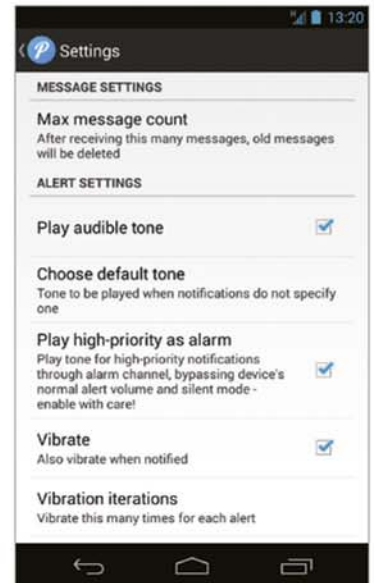
IFTTT is a powerful service, but there's a catch: Calendar events are triggered only when the event starts, so you won't get advance warning of your appointments. If you're going to rely on it as a notification service, consider creating specific "reminder events" that start before the actual event.

## DIVIDING UP YOUR DAYS

As well as keeping track of commitments, Calendar can help you organise your unscheduled time more efficiently. If you're working on more than one project, for example, it's essential to block out time for specific tasks. Calendar can help.

To create a task, click the Day or Week view, then click on the empty rectangle beneath the target date to

► Pushover is a smartphone app that gives you control over your Calendar alerts

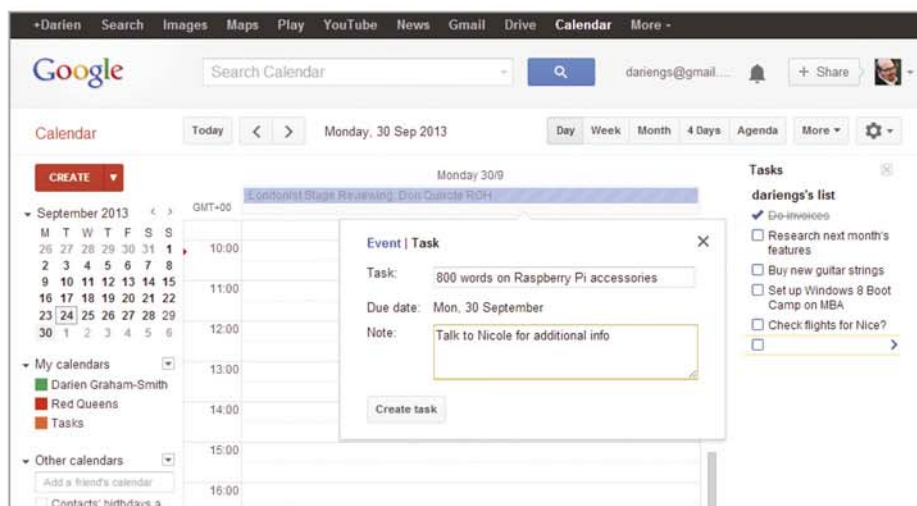


bring up the Create Event requester; in the Month view, click next to the date. At the top of the box that appears, click Task, then give your task a title and, if you want to add further information, a description.

If this is the first task you've ever added, this action will create a new calendar called "Tasks". If you can't see your tasks, make sure this calendar is visible by clicking the downward-pointing arrow to the left of My Calendars. To block-book time to complete the task, go into the Day view and create an event by dragging from the start time to the end. Your tasks should appear at the top of the day they're assigned to and also in a box on the right, listed in chronological order. To indicate you've completed a task, click the box next to its name.

Exactly how you should plan your time in Calendar depends on the nature of your work and your preferences. If your job is a mixture of long-term projects and daily tasks, you may only be able to plan weekly and block out, say, half-days to project work. However, this still lends a structure to the week, and helps you get daily fire-fighting out of the way so you can concentrate on larger projects with later deadlines.

Inevitably, becoming organised requires a certain degree of discipline. But learning how to use Google Calendar efficiently, and making the most of the available integrations and partner apps, reduces the friction in keeping on top of your schedule. It also offers you the prospect of accomplishing much more in the time you have available.



▲ You can organise your unscheduled time in Calendar by creating tasks



# DVD CONTENTS

GAMES, ESSENTIALS, FULL SOFTWARE, DRIVERS & MORE!

**E**ach issue, we aim to provide all *PC & Tech Authority* readers with a full suite of simple yet important applications, along with a variety of extended trials and full programs that are both useful and interesting.

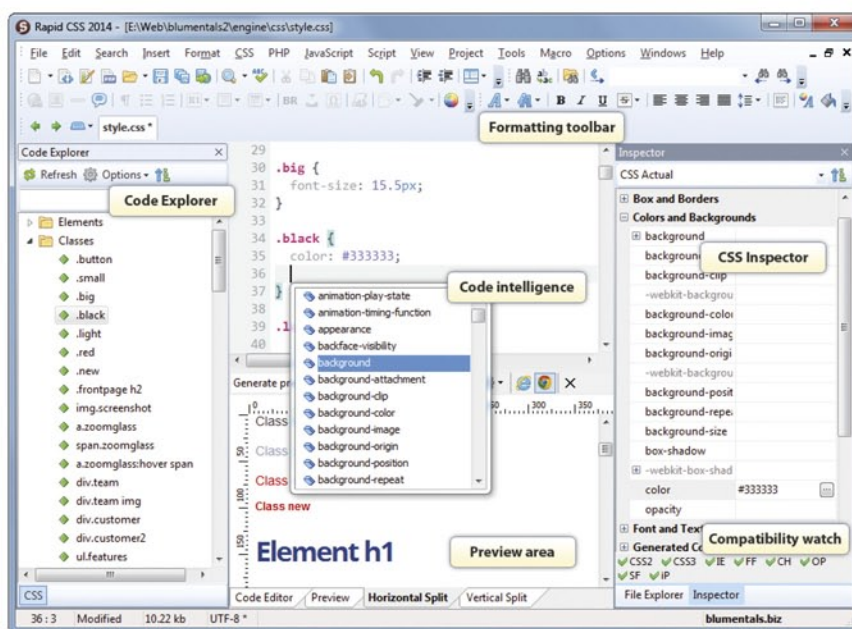
This month we're offering Rapid CSS 2014, worth \$25.95! This application lets you create, design, and edit CSS-based websites with ease.

There's also the impressively clever Bluestacks App Player, for enjoying mobile apps and games on larger screens, and our game demo this month is the quirky Goodbye Deponia.

Enjoy!

Plus we have all our usual updated software and applications that are essential to your PC.

## Rapid CSS 2014



Rapid CSS editor makes it easy to create, design and edit modern CSS-based websites. Write the CSS code manually or let the style sheet editor do it for you! It is easy because of the many awesome features such as auto complete, code inspector, CSS checker and instant built-in multi-browser preview. Rapid CSS editor is designed to save you time and make your job easier.

### Save time & boost productivity

Rapid CSS editor combines speed of a simple text editor with the power of a full-size development suite, allowing you to work faster and smarter.

### Stay 100% modern

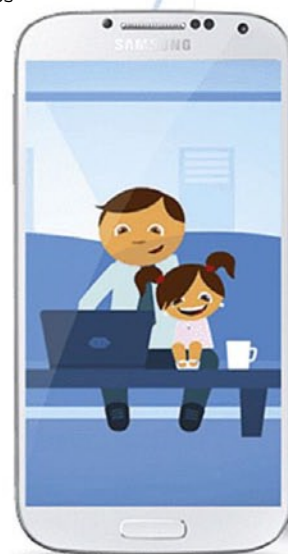
Be current with the latest HTML5 and CSS3 specs and development trends and create fluid CSS layouts and mobile websites.

### Get the best package

Just check the feature list and screenshots for what you get and then try it out. You will be surprised!

## Bluestacks App Player

Over 12 million people around the world use top apps like Candy Crush Saga, Kik Messenger, Temple Run 2 and more on their laptops with BlueStacks. It took our engineers two years to build the complex "LayerCake" technology that enables this to happen. Download App Player for free while it remains in beta.





## ▶ Goodbye Deponia

After two unbelievable adventures Rufus and Goal finally have their end in hand's reach: finding a way to Elysium and to save Deponia from certain destruction.

But Rufus seems to have polished his unmatched talent to wreak havoc on everybody and everything. Thus, instead of his big triumph, another heavy setback awaits him. For the first time in his life, he starts doubting himself.

But Rufus wouldn't be Rufus if he'd just give up like that! Still... to clean up this pile of problems he'd need to exist threefold...



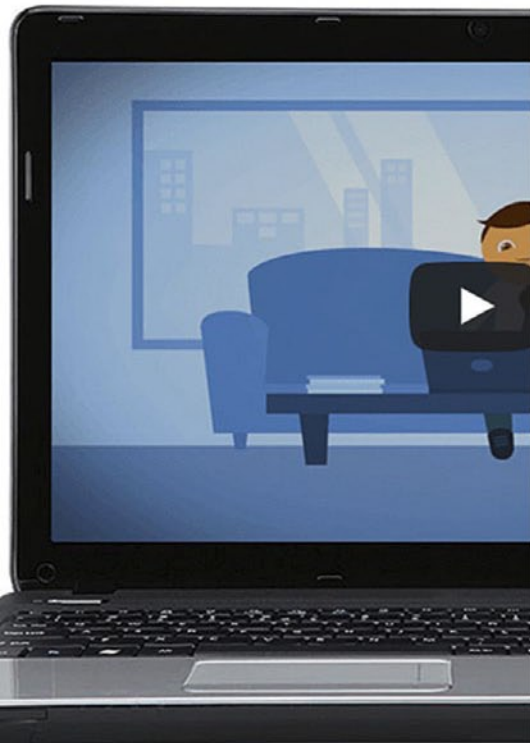
## DVD CONTENTS

### No 195 / FEBRUARY 2014

**WINDOWS** · 7Zip · CCleaner · CutePDF Writer · Deep Burner · Defraggler · Foxit Reader · Apple iTunes · Malwarebytes Anti-Malware · Open Office · Sandboxie · Songbird · Spybot Search & Destroy · Teracopy · VLC Media Player · WinRAR · WinZip · Avast Free Antivirus · AVG AntiVirus Free Edition 2011 · PC Tools AntiVirus Free **INTERNET** AOL Instant Messenger · Vuze · Google Chrome · Dropbox · Feed Reader · Filezilla · Internet Explorer · Microsoft Security Essentials · Mozilla Firefox · Mozilla Thunderbird · Skype · Steam · ZoneAlarm **DRIVERS** ATI · Nvidia · Direct X · Realtek Audio Codecs · VIA Hyperion Drivers **LINUX** Puppy Linux **FEATURE** Rapid CSS 2014 · Goodbye Deponia · Bluestacks **EDITORIAL** Burning an ISO Image

**INSTRUCTIONS:** Open Windows Explorer, navigate to your DVD drive and double-click Index.html in the root directory. **DISC PROBLEMS:** To replace faulty DVDs, please send the discs to: PC&Tech Authority DVD Replacements, R50 Victoria St, McMahon's Point NSW 2060

Make sure to include your name and postal address on the back of the package so that we know where to send the replacements. For all other DVD related issues email [cd@pcandtechauthority.com.au](mailto:cd@pcandtechauthority.com.au). As the delivery platform only, PC&TA and Haymarket Media cannot and will not provide support for any of the software or data contained on these discs. Although all discs are virus scanned, Haymarket Media cannot accept any responsibility for any loss, damage or disruption to your data or computer system that may occur while using the discs, the programs or the data on them. There are no explicit or implied warranties for any of the software products on the discs. Use of these discs is strictly at your own risk.





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Our new HDMI to VGA & Audio adapter is a great value solution for connecting HDMI equipment to older VGA displays and projectors. Designed for use with Laptops, Ultrabooks, Tablets and Smartphones, this adapter is capable of resolutions up to 1080p and delivers analogue stereo audio via a 3.5mm socket.



HDMI to VGA & Audio Adapter	38 195	\$ 49.00
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- Supports resolutions up to 1080p
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- Supports YCC to RGB and RGB to YCC colour space conversion
- Powered via HDMI port

HDMI to VGA Adapter	38 191	\$ 39.00
Mini HDMI to VGA Adapter	38 192	\$ 39.00
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# Beware of misguided Facebook fakes

**DAVEY WINDER** TAKES A STAND AGAINST ERRONEOUS FACEBOOK SPAM, OUTS A NEW EMAIL TROJAN, AND WAITS FOR A WHITEHALL SECURITY SCANDAL TO BREAK

**N**ot all social media scams are harmful, and they certainly don't all infect you with malware or collect Likes for scammers to sell to the highest bidder. Some are merely irritating - but once they're running, they may be difficult to stop. My plea this month is this: please be aware of Facebook fakes and stop reposting them.

The latest one doing the rounds of my Facebook friends (the vast majority of whom aren't techies) concerns the exertion of copyright. The post states:

"I do not give Facebook or any entities associated with Facebook permission to use my pictures, information or posts, both past and future. By this statement, I give notice to Facebook [that] it is strictly forbidden to disclose, copy, distribute or take any other action against me based on this profile and/or its contents. The content of this profile is private and confidential information. The violation of privacy can be punished by law (UCC 1-308-11-308-103 and the Rome Statute). Note: Facebook is now a public entity. All members must post a note like this. If you prefer, you can copy and paste this version. If you do not publish a statement at least once, it will be tactically [sic] allowing the use of your photos, as well as the information contained in the profile status updates. DO NOT SHARE, you must copy and paste."

It sounds pretty convincing, which is why so many people have been fooled into posting it. However, if you take time to digest what it's saying, then do a little research, it soon becomes clear how pointless it is. Start at the beginning, with "I do not give Facebook or any entities associated with Facebook permission to use my pictures, information or posts, both past and future". Erm, sorry, but you gave this permission when you joined Facebook and agreed to abide by its Statement of Rights and Responsibilities ([www.facebook.com/legal/terms](http://www.facebook.com/legal/terms)). Right up front, this states: "By using or accessing Facebook, you agree to this Statement, as updated from time to time".



If something is truly private and confidential, don't post it on the internet



Item two covers the sharing of content and information, and confirms that while you retain ownership of your content and can control how it's shared - through the use of the privacy-configuration options - "you grant [Facebook] a non-exclusive, transferable, sub-licensable, royalty-free, worldwide license [sic] to use any IP content that you post on or in connection with Facebook". Simply posting a message saying that Facebook can't use anything you post has no legal standing whatsoever, since by using the service in the first place you agree to its terms. Your only option if you really don't want Facebook to "use" anything is not to post anything on Facebook.

Next, let's look at the line that claims "the content of this profile is private and confidential information". This is equally daft: if something is truly private and confidential, don't post it on the internet - and certainly not on a social network (the clue's in the name, folks) - if you don't want people to see it. Facebook's privacy options determine how your posts are shared, and as I've said so many times before, you must revisit these occasionally to make sure you're happy

with what's what. However, be under no illusion: your privacy settings don't prevent Facebook from being able to see what you've posted. Think about it: if someone complains that a post you've made is illegal, offensive or harassing, Facebook has to read the message to determine the facts and act accordingly. Once again, merely proclaiming that Facebook can't do so means diddly-squat.

Finally, we come to the pseudo-legalese icing on these cakes - the laws whose imposing numbers are quoted towards the end. These gravely warn Facebook that any violation is punishable by laws UCC 1-308-1, UCC 1-308-103 and the Rome Statute. The last of these - the Rome Statute of the International Criminal Court - establishes the international crimes of genocide, crimes against humanity, war crimes and the crime of aggression and has nothing to do with copyright, privacy or intellectual property. On the other hand, UCC - Uniform Commercial Code - subsection 308 refers to US commerce, and specifically to the acceptance of contract terms. This may sound applicable, since it covers the concession of rights unknowingly by agreeing to specific contract terms,



but it doesn't prevent legally binding contracts from applying; Facebook's "contract" is clear and legal in all respects.

If you really want to know what Facebook can and can't do - and what you've already agreed to - visit the policies page ([www.facebook.com/policies](http://www.facebook.com/policies)), where everything is explained in reasonably understandable language. Also, the next time you get the urge to re-post one of these disclaimers to your network of friends, please think twice and take the time to research what you're posting.

### DAFT BUT DANGEROUS

You could be forgiven for not taking seriously one attempted security scam that arrived in my inbox recently. The profusion of grammatical errors, indicating the writer wasn't a native English speaker, was perhaps the biggest giveaway: "To increase your safety we are demanding from now installing the Security Module" wouldn't pass any high-street bank's proofreading test, nor would "Installation is Mandatory for all customers Co-operative Bank and from now on to log you must have security module installed".

Nevertheless, a couple of things worry me about this crude piece of malware. First, there's the matter of how I saw it at all. The vast majority of such spam - around 99% - is filtered straight to my spam bucket, so the fact this one got through is proof you should remain alert, and that there'll always be examples that evade your automated filters. This brings me to my second area of concern, namely that the entire body of the message was a bitmap image. The only parsable text was its subject line - "The Co-operative Bank Security Module" - which meant the security scanner failed to detect it as potentially dodgy.

My email setup is such that images aren't displayed by default, but those whose mailboxes display images automatically may be caught out by such tactics, not least because this particular image was "live": the entire image was a link anchor, so clicking on it anywhere would have initiated the download of the malicious executable payload.

The executable is called `co-operative_safeguard.exe` and is hosted on Amazon's EC2 cloud platform (an analysis of the email headers reveals `s3-us-west-2.amazonaws.com` is the true host). It's a nasty banking trojan, designed to gain access to your



**DAVEY WINDER**  
Award-winning journalist and small-business consultant specialising in privacy and security issues.



▲ You've already agreed to these terms, so you may as well read them...

bank account and drain it dry. What at first appears to be a rather ham-fisted phishing attempt is actually something far more sinister, albeit so badly worded that you'd need to be wearing not one eyepatch - like me - but two, in order to fall for it. Or would you?

There's another cause for concern here, which is the way this scam image exploits the good name of a trusted company, Trusteer, which provides security services to several banks' customers. I'm sure I'm not alone in being bombarded by pop-ups that invite me to download and install a Trusteer product when I use my online banking. Users will fall into two camps: those who've done it and are running a Trusteer product, and those who refuse since they have an alternative security product installed. Those in the second camp are most at risk from this kind of attack, although it depends on a number of "ifs": if you're a customer of the bank concerned; if you haven't already installed the real Trusteer product; if you've been dismissing the online banking pop-ups; if you have HTML email enabled to display images by default; and if you happen to be in a hurry the day this message appears and only notice the Trusteer logo and the "mandatory requirement" notice.

Even then, I'd say it's a bit of a stretch, but it isn't difficult to accidentally click such an image anyway - ever visited a web page and wondered why you've been taken to an advertiser's site, only to realise you clicked a page border? - and initiate

the trojan install.

### DAFT BUT DANGEROUS, PART II

Ladies and gentlemen, allow me to present a governmental security mess-up that's waiting to happen to your Commonwealth cousins in the United Kingdom.

The first link in the chain of events that made clear to me the following glitch was the receipt of a press release from the Cabinet Office with the compelling title "Radical overhaul for Whitehall security". It concerned the re-classification of security classifications (if that makes sense), and was as boring as most of these things are. Essentially, it explained that the six levels of protective document marking have been replaced with just three: Official, Secret and Top Secret.

However, the release brought to my attention the very existence of the minister for the Cabinet Office: Francis Maude. Apparently, Maude is tasked with "creating an exceptional civil service [that's] less bureaucratic and more skilled, digital and unified" and is responsible for "government efficiency, transparency and accountability".

In the release, he said over-marking classifications can "devalue the basic security principles". This is where I get to the point. You see, on the same day this communiqué went out, it was reported that the same Francis Maude who was telling people that his plans will make it "easier to share information between departments and

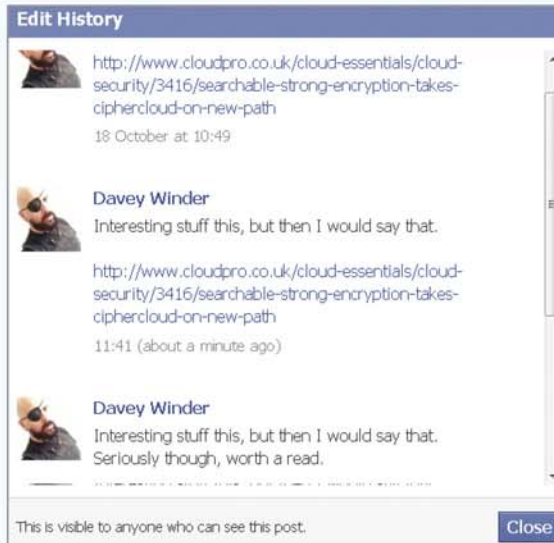
with partner organisations without undermining security" was potentially doing just that.

The newspapers reported how Maude had become frustrated with Whitehall's clunky IT systems, which prevented his iPad from working. In response, he'd installed his own "personal Wi-Fi" in his office. Of course, since the story was reported in the mainstream press, there was no hint of just what this Wi-Fi installation involved. It smells rather strongly of bad security practice, though – of the kind those in the industry are forever working to prevent.

One such person is Rik Ferguson. As well as being the global vice president of security research at Trend Micro, Ferguson is also an advisor to the EU's Safer Internet Forum, a director of Get Safe Online, a project leader at the International Cyber Security Prevention Alliance, vice chair of the Centre for Strategic Cyberspace and Security Science, and an advisor to various government technology forums. What a shame Maude didn't ask his advice.

(He also visited the *PC & Tech Authority* offices recently to show off some very scary Android smartphone hacks – very eye-opening)

"If he really has installed his own Wi-Fi, as the stories suggest, that network segment will not be configured, managed or audited by security experts in the House of Commons, rendering them blind to the risks it represents," says Ferguson. In other words, it's likely this unauthorised Wi-Fi will punch a large hole through parliamentary firewalls and connect networks that aren't designed to be connected. It's the dreaded security buzzword BYOD – Bring Your Own Device – that means the ministerial iPad and



▲ Reading the conversation history should mitigate the scam potential of Facebook's new edit feature

“What at first appears to be a ham-fisted phishing attempt is something far more sinister”

iPhone will gain access to systems in an unmanaged way.

Of course, as minister for the Cabinet Office, Maude will have permission to access high-clearance systems – but this isn't the point. What this does, or could do, is enable unauthorised devices – rather than the user, per se – to access stuff they shouldn't. This is about the hardware and the potential for security breaches that such shadow IT represents, be it in parliament or your head office.

"Shadow IT is the USB stick in your pocket, it's the DSL link under your desk – or the wireless access point in the cupboard," Ferguson explains. "In the new paradigm of cloud and consumerisation, the problem is exacerbated. Webmail becomes a covert channel, unmanaged file-synchronisation services become a back door. Virtual servers in someone else's cloud often end up holding the crown jewels of the organisation outside every process and oversight of the business owner."

I have nothing against Maude wanting to connect his iPad while he's in the office, especially if it helps him perform better in his ministerial role. However, I've everything against him – or anyone else, for that matter – using an unmanaged network as a bridge to gain access. As I say, the precise nature of the Cabinet Office installation is unknown, but for the record, if you want to bring your own anything into the workplace, please go through the IT department to ensure it's properly secured and doesn't undermine the integrity of the business network.

### CAUTIOUS WELCOME FOR FACEBOOK EDITS

Regular readers of this column will recall that I'm not a big fan of the inmates

of Facebook's user-interface-design department. One of my biggest bugbears is the fact that I can't edit my own posts, only the comments I leave on other users' posts. This means that if I make a mistake that goes unnoticed (and I make plenty, thanks to my failing vision), my only options are to explain the mistake in a subsequent comment or to delete the whole thing and do it again.

Until now, that is. By the time you read this article, the ability to edit original posts should have been rolled out to all Facebook users (and hopefully across the mobile app versions, too). I'm not too worried about this function being abused to spread malware, although there is a fear in some circles that baddies could post something containing a genuine link to garner a load of Likes, then use the Edit function to change the link to something malicious, thus exploiting the accumulated Likes to engender trust.

There's no doubt that's a genuine concern, and I'm sure it will happen, but my own worries are mitigated by the fact all edited posts are marked as such onscreen. Their edit history is visible to anyone who wants to view it, too, so simply checking the history of any edited post before clicking its links would prevent such a scheme from working. Maybe I'm being overly cautious, but I think users should get into the habit of checking a post's edit history before clicking a link.

Harder to guard against are political lobbyists and spammers who may be tempted to perform this cycle of post/Like farm/edit content/reap reward for other reasons. Once a post achieves a certain critical mass of Likes, it will attract more viewers due to that fact alone, and once they've read the post it matters not whether they notice it's been edited, since its message has already been delivered. Maybe I should have listened to my mum when she said "Be careful what you wish for". ■

### MORE DDOS

Large DDoS attacks are growing at an alarming rate, according to Arbor Networks' ATLAS system, which visualises internet-traffic patterns and threat evolution. In October, Arbor reported a 350% growth in the number of DDoS attacks monitored at over 20Gbits/sec in the first three quarters of 2013, compared to the whole of 2012. The average DDoS attack stands at 2.64Gbits/sec, up 78% from 2012. The largest verified attack size was 191Gbits/sec. However, 87% of all monitored attacks lasted less than an hour.

The **co-operative bank**

Dear Customer,

To increase your safety we are demanding from now installing the Security Module.

Installation is Mandatory for all customers Co-operative Bank and from now on to log you must have security module installed.

Installing the Security Module is simple and quick, make the installation by clicking the button below.

**INSTALL**

**Safeguard**  
Your Online Banking Identity

DOWNLOAD TRUSTEER'S RAPPORT TODAY

Trusteer

▲ This malicious message might just work, despite the grammatical errors



# Input Output



**DAN RUTTER** BRINGS THE ANSWERS TO YOUR QUESTIONS LIKE NO-ONE ELSE CAN

## IS A FAILED HOTKEY A COLDKEY?

**I** They've discontinued Winamp but I'm still using it, because it's not as if there's a new MP7 audio format I have to keep up with or anything. But right after the End Of Winamp was announced I got a brand new problem with the player, which I think might be related.

The problem's only small: Alt-3 to show the properties and tags and such of the selected file doesn't work any more. Right-click and then "View file info..." works, but the Alt-3 shortcut shown right there on the menu next to that option does not.

I rebooted (Win7, 64-bit) and then it worked again... for a while, but then stopped again.

Is this discontinued software... falling into disrepair?

**O** A little later, Sean e-mailed me again to inform me that when he quit out of Firefox, Alt-3 worked again. When he ran the browser again, it didn't. A couple of experiments later, I verified that the fault was... lack of memory. Or possibly one of the other memory-like limited resources in Windows, like "handles", and the "desktop heap" ([www.dansdata.com/io067.htm#4](http://www.dansdata.com/io067.htm#4)).

Running out of memory is one of the Two Great Problems that can manifest in a very wide variety of bizarre ways, because they're so fundamental to the operation of pretty much the whole system. (The other Great Problem is a flaky power supply.)

A computer that's out of memory, or out of some system resource that works in a similar way, can indeed just silently stop being able to do certain things, and not be able to tell you what's wrong. (It may help you to think of it as a child who's so upset they're unable to tell you what's upsetting them.)

This happens either because the resource the computer's out of is one that it'd need more of to pop up an error box, or because

programmers didn't test their software on a PC with (say) 150 browser windows open, or heavy-duty video effects generation happening in the background, or whatever. Random features silently not working any more are a classic symptom of low memory. Besides things just not working, and other obvious stuff like malformed windows lacking the normal furniture, recently on my own computer I saw a low-memory condition cause YouTube to only be able to "maximise" to the top left quarter of the screen. If you didn't pick that as being memory-related, you could go on a fruitless safari through video drivers, browser plugins, reinstalling Flash...

## IT'S FOR JUMP-STARTING THE LUNCH ROOM

**I** At my office, we have Ethernet wall sockets, but in three rooms there's one double socket and one single socket by the door, with one socket on the double plate connected to the single plate by a short patch lead.

The other socket on the double plate goes to a little switch that feeds the computers in the room, but if you unplug the patch lead, you unplug the room from the network. Computers in the room can still see each other (unless you restart one and it now can't get an IP address etc), but they can't see the rest of the network any more.

I'm trying to work out why this is wired this way, and also wondering if it breaks a law (we're in Adelaide, if it matters) or may be indicative of

other crazy stuff inside the walls. The building was wired about four occupants ago and nobody seems to know what the deal is. Should I be worried?

**Caleb Agnes**

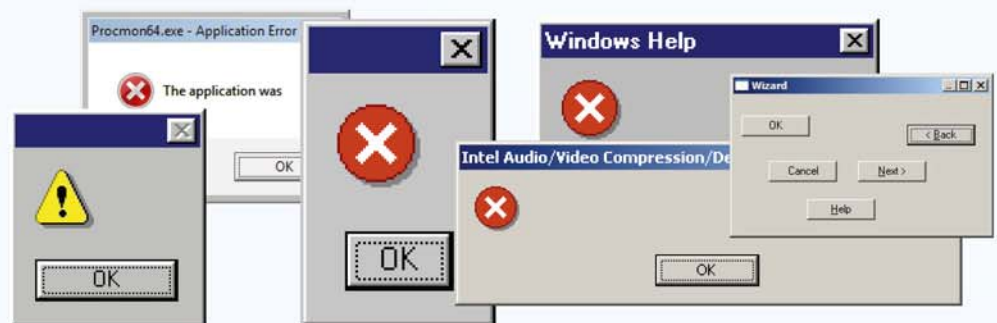
**O** Probably not. This sort of setup is a simple way to make it possible to simply manually disconnect a room from the wired network, generally for security purposes of some sort - confidential stuff on the computers in that room, students doing exams on computers, that sort of thing. It's less useful now that wireless networking is so ubiquitous, but it's still pretty common, particularly in schools. I strongly doubt that it breaks any laws. Your office does still have the normal, entertainingly high, chance of apparently having been wired by frightened felines shoved into the walls and ceilings with cut-rate Ethernet cable tied to their tails.

(That's why they call it Cat5, of course. Only recently have network installers managed to use six cats at once without losing one in there.)

## YOU'LL NEED A PNEUMATIC SCALER, JACKHAMMER, OR CHANNEL TUNNEL BORING MACHINE

**I** Is it actually possible to "delid" a CPU for better cooling? I'd never heard of this until my nephew (aged 12) mentioned it, and I strongly suspect he's trying to trick his idiot uncle into taking to his computer with an angle grinder.

On the other hand, though, I



The classic symptom of running out of memory is that the computer can't quite tell you what's wrong any more.

remember when CPUs had just a plain silicon surface on top (hell, I remember when CPUs didn't need fans!), and now they all seem to have metal caps over the chip, which I presume are there to protect it and which I also presume could in theory at least be removed and thus get rid of one extra heat-blocking thermal contact point.

I've got an Intel CPU with a K on the end of its name which I think actually could run faster with better cooling - but is this about as practical as submerging the whole computer in liquid nitrogen?

**Tom Mawby**

**O** Yes, it actually is possible to get better cooling by delidding *certain* CPUs. It is, simultaneously, about as risky as you suspect.

The whole idea of putting metal heat-spreaders on the top of a CPU package is, as you say, to protect the small and fragile silicon from the force of a heat-sink being cranked down on top of it. (The corners got ground off a lot of poor little exposed-die Celerons and Durons, back when they were prime overclocking material and often saddled with big heavy heat-sinks.)

The thermal interface between the chip and the spreader is supposed to be a very good one. But in some CPUs, including fancy Intel Ivy Bridge and Haswell units, it actually isn't. For ease and cheapness of manufacturing, the chip-to-spreader contact inside is a pretty sloppy one, with thermal goop of no particular merit filling the gaps.

This goop does not need to actually stick the CPU to the spreader, since the whole point is that the cap is held on around the edges to help protect the chip. So alarming exercises with razor blades or, I kid you not, a bench vise, a chunk of wood and a claw hammer, can quite easily pop off the spreader without damaging the chip.

The challenge now is to get a *heat-sink* onto that chip without damaging it. If the heat-sink is a slim little water-block, probably yes. If it's a copper skyscraper, not so much. Many current de-lidders just replace the Intel thermal goop with better goop, polish down the top of the spreader for better contact, and put the spreader back on. Otherwise you'll need a shim to put around the exposed die to take

## I/O OF THE MONTH

### MYSTERIOUS GIGS

**I** recently purchased a Samsung SSD (111Gb Formatted) to speed up the boot process on my Win 7 desktop. When trying to clean up the C drive to get it to a reasonable size before using the clone tools I encountered the problem of "invisible files".

That is, I have 85Gb in the C drive that I can see via Explorer and other tools, but 358Gb of reported use. I have tried everything I can think of to remove system files, page files, disc clean-ups, etc. without any success. I do not really want to start from scratch with a system build, so would be interested in any advice as to what the extra capacity would be used by.

I have included snapshots of the system and disc details.

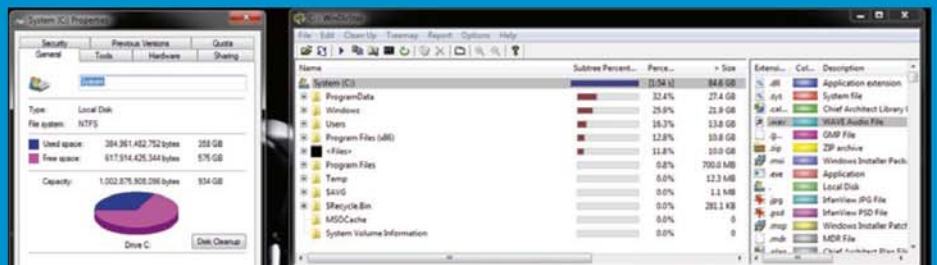
**Peter Ferris**

**O** Presuming you don't have some kind of malware that's secretly making you a leading world source of pirated pornography and no-subscription-needed Adobe software, there aren't many kinds of hidden file that can add up to such a large amount of data. Few system files can be anything like this big. As you say, swap files could add up to that much, as could temp files for certain highly data-intensive applications like video editing. But the usual suspects only add up to tens of gigabytes, at most.

WinDirStat won't enumerate the size of stuff in folders the logged-in user doesn't have permission to view, which can amount to a lot on a multi-user computer. WinDirStat also doesn't notice stuff in the Recycle Bin, which can be quite large, but obviously you've emptied it. About the only suspect left is slabs of data created by the System Restore and/or Shadow Copy services.

These services are what let you roll back Windows to how it was before some new driver installation or buggy uninstaller hosed the system, but the price you pay is ever-increasing amounts of data, all of it "super-hidden" in the System Volume Information folder. You can view super-hidden files in Explorer by turning off the good old Folder Options -> View -> Hide protected operating system files (Recommended) option, but this still doesn't guarantee that any given folder-size-displaying program will notice them.

Anyway, if your computer's currently working OK and you've no need to roll it back, you can turn off the System Restore and Shadow Copy stuff (manually in services.msc, if you want to be bossy), and then if you make the files visible you should be able to delete them. It may also be possible to get the imaging software to just ignore them, rendering this whole answer redundant. But at least now I hope you have more clue about what the heck is eating up your disk space.



▲ What's 271 gigabytes between friends?

some of the pressure.

A lousy thermal contact inside the package, for stock-speed CPUs in a passably ventilated case with unremarkable ambient temperatures, works fine. Most CPUs don't run at anything like their full electrical power most of the time, and modern CPUs reduce their clock speed when full power is not required, or (importantly) when they sense themselves overheating. This last feature can cover up an awful lot of temperature problems.

For everyday computing tasks the user won't even notice if the

CPU's thermal-throttled itself down, though the effect may be very obvious in high-CPU-load tasks like 3D games or non-GPU-accelerated HD video playback.

If the heat-spreader's got a good thermal contact with the CPU, though, then there's a limit to what delidding can get you, and a considerable chance of mechanically damaging the processor. This is one of those jobs you only know how to do after you've done it... but will have forgotten by the time you need to do it again. ■



# Detox your PowerPoint presentations

**SIMON JONES** EXPLAINS HOW TO CREATE EFFECTIVE SLIDESHOWS IN MICROSOFT'S MARKET-LEADING TOOL – AND KEEP YOUR AUDIENCE FROM BOREDOM OR NAUSEA



**W**hen you're designing a presentation, it's tempting to make it as whizzy as possible. After all, PowerPoint offers plenty of fancy features, so shouldn't you try to use them? Actually, no – just because you can perform eye-catching tricks doesn't mean you should. PowerPoint is a great presentation tool, but it's too easy to go overboard by adding stuff that distracts from the message you're trying to convey. The general principle when working with PowerPoint is definitely "less is more".

Let's take an example. The act of moving from one slide to another is called a transition, and PowerPoint lets you choose from many different effects. Some of them are subtle, but many are so garish that you risk frightening your audience right out of the door. Preview them all, then pick the one that best matches the message you want



**SIMON JONES**  
An independent IT consultant specialising in Office Automation, Visual Basic and SQL Server.

to convey, your company's image and the audience that will see the presentation.

The Transitions gallery is divided into categories called Subtle, Exciting and Dynamic Content, but you should take these labels with a pinch of salt: some of the "subtle" transitions are anything but, while some of the "exciting" ones are rather dull. Try to avoid the more slapstick transitions, such as Wind, Airplane, Crush or Origami, which treat your slides as though they're pieces of cloth, curtains or sheets of paper. The Honeycomb, Glitter and Vortex effects, on the other hand, might look at home on a downmarket TV game show, but not in a business presentation. Simple fades or wipes are understated, less noticeable and let your message stand out.

The transitions in the Dynamic Content category animate only the foreground objects of a slide, leaving

the background static. Using these will make your presentation look more professional, since they'll cover up any black gaps between slides and ensure that – unlike the Push, Cover and Uncover effects – any gradient fills or background pictures remain in the same place from slide to slide.

Most transition effects have options, mainly to do with the direction of travel (from the left, from the bottom and so on). You can also change the time taken to effect the transition. Generally speaking, you'll want transitions to take between half a second and two seconds; each effect has a preset duration that you can change. You'll see a preview of each effect when you pick it, but you may need to view it in the context of the whole slideshow to be sure it's right for you. You can pick one transition effect to cover the whole show by setting it on one slide and clicking Transitions | Timing | Apply To All, or by pressing Alt+K, L.

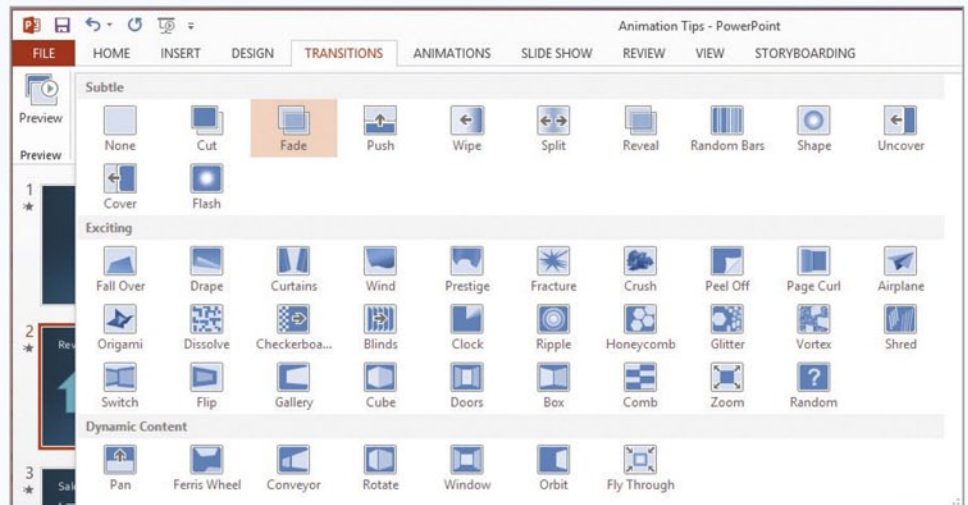
Alternatively, you can switch to the Slide Sorter view, select all the slides and apply the transition. If you have intermediate slides that are intended to introduce new sections in your presentation, you may want to use a different transition to indicate that a change of section is underway. You can do this by selecting only those section-heading slides in the Slide Sorter view and applying the alternative transition to them. (Remember: a transition is the effect that takes you into a slide, not out of it.)

## THE PERILS OF ANIMATION

I've watched far too many presentations in my time that include an animation such as a spinning coin on a slide that's supposed to illustrate corporate revenue. If you were to ask the audience afterwards what the company in question's current revenue figure was – or even whether it went up or down in the last reporting period – a large proportion of them wouldn't be able to tell you. They'd only have seen the spinning coin, which would have completely distracted them from the rest of the slide's contents, as well as from the speaker's voice (it's no coincidence that hypnotists use similar devices).

Animation is usually only effective in a presentation if it's used subtly to emphasise the data you're trying to convey. In the above example of corporate revenue reporting, you might want the headline figure in thousands, millions or billions – depending on the size of your company – together with an arrow that points up or down. Apart from the title, these should be

Simple fades are understated, less noticeable and let your message stand out



▲ Pick your transition effect carefully – the category names can be misleading

the only elements on the slide, and the animation must support the information you're trying to impart. Float In is a good effect for the upward arrow, followed by Fade In for the revenue figure.

This animation will support the message you want to convey ("revenue went up this quarter to \$500,000"), and you should speak in sync with the slide being drawn. If you want preamble before you reveal the actual figure, you may want to make the arrow appear after a mouse click, but if there's no preamble required, make it appear "after previous" (the previous animation being the new slide being drawn).

Always think about the words you're going to say to accompany each slide, but don't write them all down on the slide itself. The slide is there to illustrate your presentation; it isn't the whole presentation. If you write down every word you're going to say, there's no point you being there to read them out: the audience will have read them before you've said anything – you'll be adding nothing, and they'll become bored very quickly. It's better to make speakers notes that you can refer to while presenting.

Animation effects are easy to achieve using the Animation Pane and the Animations tab on the ribbon. Animations are divided into four groups: Entrance, Exit, Emphasis and Motion Path. Entrance animations, which affect the way an item gets onto the screen, are the most commonly used. Emphasis animations can be used to highlight a particular object on the screen, but they should be used sparingly. Exit animations should be used more rarely still: unless you're actually talking about removing, deleting or otherwise making something disappear, you don't need them. It's usually sufficient to change to the next slide without

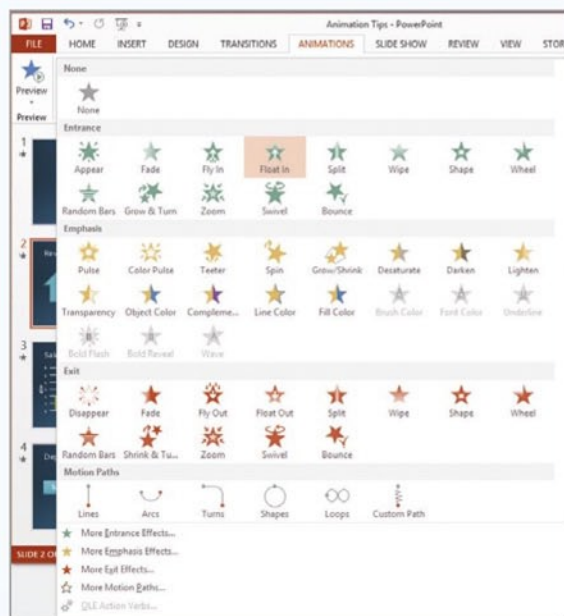
having all the objects on the current slide fly away, split, fade or bounce off the screen.

Motion paths are perhaps the most abused of the animation effects, since making text or objects fly around the screen is best avoided unless you want to make your audience sick. A good use of a motion path is when you have objects stacked on top of one another: using a motion path to move the top one out of the way to reveal what's beneath, or to move the bottom object so it slides out from under the topmost object, can emphasise a process – such as a department being split into two – since the motion reinforces the concept that something new is emerging from something existing.

In PowerPoint 2013, the Animation gallery on the ribbon shows the most common animations in the four groups. However, many more are available from a dialog activated by the "More [...] Effects" option at the bottom of the gallery. Several options, which are chosen via the Effects Options button, can be applied to each effect. The Float In effect, for example, includes options to Float Up and Float Down, while the Fly In effect can be set to start from any of the sides or corners of the screen.

Earlier versions of PowerPoint have a more complex Animation gallery, in which all the options are listed separately. The simplification of the Animation gallery for PowerPoint 2013 could be interpreted as an attempt by Microsoft to restrain the overuse of animation effects, but it still includes the most nauseating effects, such as Swivel and Bounce, on the main gallery. These should be banned from all business presentations under pain of a huge fine.

To add an animation to an object, click the object to select it, then click to



▲ The Animation gallery includes both good and garish effects

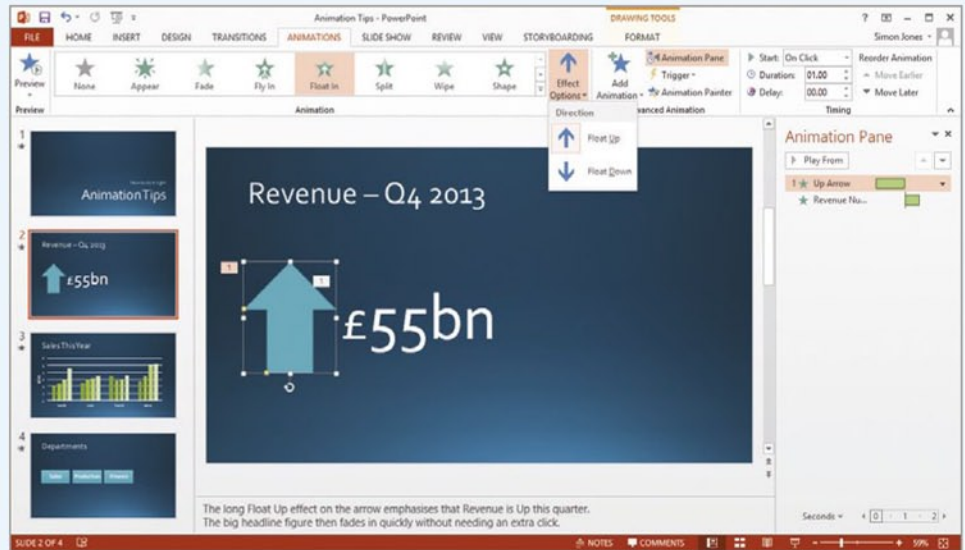


select the effect and option you want from the gallery. If you want more than one animation effect on a single object, click the Add Animation button to add a second or third animation to the object.

The Timing group on the Animations tab of the ribbon lets you decide whether the animation will be started by a mouse click, with the previous animation (that is, they'll run concurrently), or after the previous animation. It also lets you set the duration of each animation, and the length of any delay before the animation starts. You can also reorder the animations by moving the current one earlier or later in the sequence.

However, these settings are actually easier to control via the Animation Pane (Animations | Advanced Animation | Animation Pane, or Alt+A, C). This shows all the animations on a slide, in the order they'll play, complete with bars showing how long each effect will last. You can drag the animation effects up and down this list to reorder them, and drag the start and end points of their bars left and right to change the duration and delay of each one; right-click an effect in the list (or click the down arrow at the right of the row) to change more options, such as the start trigger of the effect. The Animation Pane is great for making adjustments to effects you've already applied to a slide, but the Animations tab on the ribbon is the way to add more Animations.

If you want to animate a bar or chart to reveal its values gradually, there are additional options you need to play with. Under Effect Options, you can choose the way the chart animates – as a single object, by series, by category, by element in series or by element in



▲ Simple animation effects can be used to reinforce a slide's message

category. If, say, you have a chart of sales by region and quarter, you could make the quarter the series and the region the category, or vice versa – it all depends on how you want to present the data. In any case, the category is what appears along the axis; the series labels appear in the legend.

Remember, it's the data that's important, not the axes, grid lines and so on. As such, it's better to have these elements appear with the slide itself and animate the bars afterwards. Do this by expanding the effect in the Animation Pane and deleting the effect from the background element of the chart (which should be first in the list). If you want a pause before revealing a particular bar or set of bars, set the animation for that series or category to start "On Click" rather than "After Previous".

“Animation is usually only effective if it's used subtly to emphasise your data”

## Quick presentation rules

- Keep it simple
- Keep the message and its audience in your mind at all times
- Don't put all the words you want to say on your slides – otherwise, there's no point in you speaking
- Keep the background simple and consistent
- Don't put your company logo on every slide – not only is it distracting, but it's also a waste of space
- Don't clutter your slides – white space is important, too
- Each slide should concern only one topic to aid the audience's concentration
- Use only one or two fonts, preferably sans serif ones, since they're easier to read at large sizes
- Don't use ALL CAPITALS or underline in the main text – these attributes reduce rather than enhance readability
- Use colour, bold and italics to emphasise important data
- Use SmartArt, diagrams and charts wherever possible to relieve the tedium of endless bullet points
- Use good-quality photographs liberally to illustrate your message
- Don't be afraid to crop, rotate, flip and recolour photographs as necessary
- Avoid clip-art – it makes a presentation look lightweight and childish
- Make sure everything is big enough to be read from the back of the room
- Stick to one simple transition effect between your slides – with the exception of an alternative effect to mark new sections
- Use animation sparingly, and only to support or emphasise the message
- Don't use sound effects
- Rehearse what you're going to say before you present, and write speaker notes to remind you
- Make eye contact with the audience – don't talk to the wall or the floor

You'll need to make sure every element of the chart is legible, even from the back of the room. The font size of the axis labels, legends and other paraphernalia must be large enough to be read easily. Show numbers in thousands, millions or billions as appropriate, with as few decimal places as possible – don't leave people frantically trying to count zeros to work out how big a number is.

Motion Path animation moves an object around the screen, and appears when you are designing your slide as a dotted line between green and red arrows: the object will start its journey at the green arrow and end it at the red one. When you're editing this kind of animation, the object you're moving is shown semi-transparently at both ends of the path, so you can see what it will be covering or covered by; this helps you line it up properly. This effect must be used carefully, however, since it's all too easy to make viewers feel queasy by bouncing around objects for no good reason. ■

## HIDDEN TREASURE

When using the Animation Pane, the names of the objects will appear on the slide. These will include unhelpfully titled things such as "Content Placeholder 5". To rename them, click Home | Drawing | Arrange | Selection Pane, or press Alt+H, G, P, then double-click on any item in the Selection Pane. This is yet another piece of "hidden UI" you're expected to stumble upon – it isn't even mentioned in the Help text.

# The rise of the free OS

**JON HONEYBALL** DOESN'T THINK THAT THE FREE RELEASE OF MAVERICKS WILL CHANGE ANYTHING FOR MICROSOFT, AND IS IMPRESSED WITH IPASSWORD



**T**he Twittersphere went nuts at the news from Apple that the 10.9 release of OS X - named Mavericks - is to be released free of charge. The chatter was that this is some sort of tipping point, a step over the cliff, and that nothing will be the same again, especially since it's also made iWork free. Well, as always, it isn't that simple.

Apple has successfully manoeuvred itself into an approximately annual release schedule for major versions of OS X; the same applies to iOS. Although the firm has been charging for the recent new versions, the cost per upgrade has been dropping fairly quickly, so it was entirely predictable that 10.9 would be free. Of course, this didn't stop Apple from making a few barbed jokes at Microsoft's expense, working up Microsoft's PR chief Frank Shaw into a holier-than-thou hissy fit in a public blog post.

All good stuff, especially since he went on to claim that the new Surface 2 (the updated RT version) has a "fully featured version of Office" - despite Microsoft's website reminding us that Visual Basic for Applications, among a long list of other things, still isn't present in Office 2013 RT, and that "some functionality may be limited" on the Surface 2. So, it's limited - but not in a way that affects the marketing spin that it "comes with full versions of Office 2013". Don't you just love it?

Perhaps Mr Shaw should try performing some real work using Office RT; he may find that it comes up

short, as his business customers have. You can't use the supplied RT version of Office for business work - you need a business licence to transform it into a business-licensed version. And, unlike the Intel version of Office, this process won't actually enhance or complete its functionality - all it does is give Microsoft money for nothing (other than compliance with its arguably morally corrupt licensing policy).

Morally corrupt? You might think that's an exaggeration, but when you're forced to pay again to use something you've already paid for - without any tangible benefit - I don't. But anyway, I digress. Microsoft lovers may point out that Windows 8.1 is free for all Windows 8 users, which is true, but given how half-baked and generally unfinished Windows 8 was, it isn't exactly a big surprise that even Microsoft's spin doctors couldn't come up with a reason to charge for the 8.1 fix.

Some may argue that since Mavericks is free, it's unlikely that Apple will be able to charge for its OSes in the future. But Apple clearly has no intention of charging for its OSes any more: it stopped doing that when it brought iOS - every upgrade of which has been free - to the marketplace. The problem for Microsoft is that it relies on OS licences for a significant part of its revenue. How is this going to keep working if Microsoft is the only vendor charging for its desktop OS licence?

This question needs to be split into two parts. First, we need to consider

business users. They're locked into rolling corporate licensing schemes of truly mind-bending complexity and opacity. No-one understands what's actually required, and that includes the specialists in the field. If you meet anyone who says they do, ask them to indemnify your licensing solution - assuming you follow their rules and recommendations - then watch as they all start running away. These customers are paying today, and will continue to pay. Nothing has changed with Mavericks becoming free. The business desktop is Windows, and will continue to be so. (If businesses really wanted a free desktop OS, then they would have moved to Linux years ago.)

Now, let's look at the home user. One key difference between Mavericks and Windows 8.1 is that Apple allows effectively any previous version of OS X to be upgraded to Mavericks for free; Microsoft allows only Windows 8 to be upgraded to 8.1. If you're running 7, Vista or XP, you're out of luck - you'll have to pay full whack. This is a mistake, and one that points to an underlying problem for Microsoft.

Apple wants - indeed, needs - as many people as possible to be on the latest version of OS X, simply because it makes its job easier: it reduces the number of versions it needs to support, and ensures more customers have access to the latest APIs and capabilities. From Apple's point of view, there's no downside to the decision to become free.

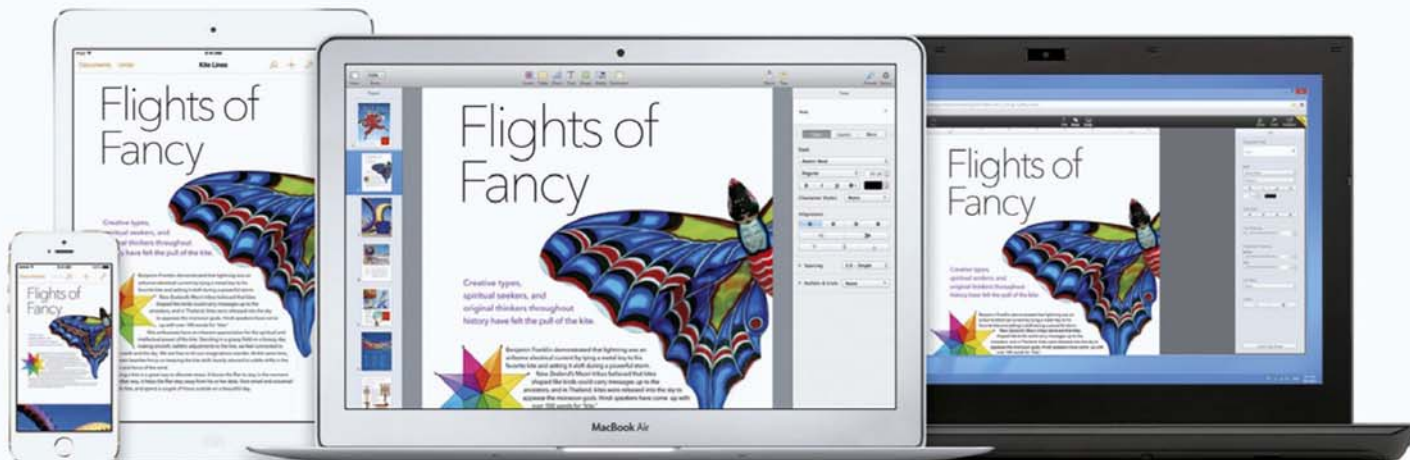
Compare this with the mess Microsoft has landed itself in with its client OS strategy. By charging for the initial licence purchase, and then

“ Even Microsoft's spin doctors couldn't come up with a reason to charge for 8.1 ”

▶ The Surface 2 may have Office, but it's limited







▲ Apple wants new versions of OS X to be deployed as quickly as iOS

charging considerable amounts for all of the major upgrades, it has allowed a situation to arise where a considerable proportion – perhaps even the majority – of its customers aren't on the current version of its OS. As such, Microsoft has to continue to support 7 and Vista. This adds to its costs, and means it can't push innovative applications for the Windows platform, since they simply won't work for the majority of customers. This "feet in treacle" phenomenon has brought Microsoft's development effort to a squelching halt.

The customer base of iOS, on the other hand, is moving to iOS 7 with extraordinary pace, meaning developers can target iOS 7 safe in the knowledge that almost all paying customers are ready, waiting and compliant.

Of course, what Microsoft really needs is a hard reset, to bring to market a fresh OS without any baggage. This would allow it to control the platform more tightly and sweep its users along with the rapidly changing underlying platform, just as iOS does.

Unfortunately, its last attempt at this was the Metro interface for Windows 8, especially on the ARM platform, and we know how badly that has backfired so far. There are now only two vendors making Windows RT 8.1-based solutions: one is Microsoft with the Surface 2; the other is Nokia, which has just launched its new tablet. That's the soon-to-be-owned-by-Microsoft Nokia. You only need to recall the history of the car industry to know where such badge engineering leads – the name "British Leyland" should bring back all the horrors of the 1970s and 1980s.

So, what does this mean for Windows 9? This is a big question, since the answer will hugely affect Microsoft's future revenue. The reality will be simple, however – more of the same. Expect Microsoft to charge for

the Windows 9 upgrade, and to keep taking money from OEMs for the preinstallation onto new hardware. It will continue to make a considerable slice of its income from rolling contracts for corporations, which will keep coughing up the money for a quiet life. Nothing will change unless there's a significant stimulus.

Now, if I wanted to inflict maximum damage on Microsoft, I'd suggest to Apple that it release Mavericks for free for all Intel hardware; this would put extreme pressure on the preinstallation OEM marketplace for Windows for new users, especially home users. This isn't going to happen, however. It would do nothing for Apple in terms of income or app sales; it would simply increase the company's costs, since it would have to support the myriad hardware on which Windows is being run. These users are unlikely to make their next purchase from Apple, either, so there would be no future revenue to look forward to. And, to be blunt, it's very useful to have Microsoft tied up as a whipping boy that Apple can occasionally throw a barb at to draw some attention.

So, that's the bottom line – business

as usual. The software landscape hasn't truly changed, and there's no great threat to Microsoft, either. The only change is Apple's clear desire to get OS X version usage more in line with iOS deployment rates. Meanwhile, Microsoft is trying to persuade us that XP is a bad thing, Internet Explorer 6 is even worse and fixing these problems requires you to open your chequebook. Could it have painted itself into a worse corner?

## OS X UTILITIES

A couple of utilities, apps and tweaks for OS X have impressed me recently. The first is Duplicate Detective from [www.fiqlab.com](http://www.fiqlab.com), which does a good job of scanning your hard disk, finding duplicates and making sensible recommendations about which ones to delete. In the past, you'd have needed to insert a bunch of file links for the ones you deleted, pointing back to the master copy. However, with today's full disk indexing, this isn't needed.

I confess I don't really trust any tool to wholesale delete files for me, but they can be useful to point out which subdirectories contain duplicated files hidden away (do I really need to say "back up first"?). A quick scan of my



It's useful to have Microsoft as a whipping boy that Apple can occasionally throw a barb at



**JON HONEYBALL**

Computer journalist and consultant specialising in both client/server and office automation applications.



▲ Other than Microsoft, Nokia is the only vendor producing an RT-based device

MacBook Pro found more than 200,000 files, of which 1048 were duplicates, taking up 37.3GB. A quick flick through the list, comparing it to the hard disk, showed that the software was spot on, so all of that space was saved.

Another tool that's good for visualisation of your disk space is DaisyDisk ([www.daisydiskapp.com](http://www.daisydiskapp.com)); point it at a disk or directory structure and it gives an excellent visualisation of where all the space is being consumed. You can click through and drill down deeper and deeper. I find it useful for hunting down those few huge files that can clutter up a hard disk, things such as whole OS installation images.

I must also give a mention to the new version of VMware's Fusion. I know there's something of a battle royale going on between Fusion and Parallels; I'll confess that I've been a Fusion user for a long time and I find it works for me, although you may prefer Parallels. The new version of Fusion supports Mavericks, and I find it invaluable for running large Windows installations on my Mac.

I have no need for Boot Camp, and I can't understand why anyone would use it when there's superb technology such as Fusion available. Sure, Boot Camp is free, but you'll still need a licence for Windows (if that's what you're going to use). The new version of Fusion adds welcome new capabilities, especially for larger machines. Don't overlook the Pro version, either - it allows you to do more, especially by taking a base VM disk image and creating multiple instances from that for minimal disk overhead.

Another utility I'm impressed with is Garmin's update service, which checks for updates without making a fuss, and has no problem handling the ownership of multiple satnavs. It downloads the updates to the satnav, a computer or both. It just works.

Compare this with the updater from TomTom, which I use with my old Go 940 device. It's a pain; I can't understand how TomTom managed to make things so difficult. It seems you must have a separate email address for each registered device - you can't have one family account - and it frequently notifies me of updates, only for me to find there are none when I actually try to carry it out. I'm afraid TomTom has lost the plot here, and Garmin has pulled ahead with a significant lead. Both manufacturers' products work well enough, but updating is a big deal for satnavs, and making the process simple isn't optional.

Finally, I've really fallen for 1Password. It does a great job of looking after my logins, passwords and other information that I want encrypted but with me at all times. The product has recently upgraded to version 4, and installing it was a straightforward and easy process. Integration with Dropbox has been improved, too, so you no longer have to keep your Dropbox folder on your main hard disk. This is useful if you have a workstation with a small SSD and external storage for the larger stuff. The browser plugins work even better than before, so there's little I can say against this tool. I'm so much happier having long and complex passwords



▲ I've really fallen for the password-management software 1Password

for services such as Facebook and Twitter - if someone does break into my account, it won't be because they've guessed my password or used a dictionary attack.

### WI-FI LOGON PRIORITY

I'm sure you all know this, but you can change the order that Wi-Fi networks are joined on your laptop, which is especially important if you have several access points at one place and need to prioritise which one is joined first. Just go to System Preferences | Networks, choose the Wi-Fi on the left-hand side and then press the Advanced button. On the Wi-Fi tab, you'll see a list of Wi-Fi base names; you can click on these and move them up and down the list.

It's well worth clearing out this list every few months, especially if you travel a lot with your laptop - mine becomes choked up with a huge number of hotel names, airport-lounge logins and so forth. Don't delete those you may visit again, since it's comforting to find that you're automatically logged in when you return to a hotel or airport lounge - if they haven't changed the password, that is.

Another config setting worth checking out lies under the Users & Groups icon: click on the Login Items button to see which things are automatically started when you log in. Pruning this list can speed up your startup process and ensure that you're not running a heap of unwanted crud in the background. ■



▲ DaisyDisk produces an excellent visualisation of your disk drive

### NEW PLATFORM

I've seen the future - and I'm excited, since it's the first truly credible working solution to a set of really big problems. At this point, I have to fall silent, since this information is under a non-disclosure agreement. I'll tell you about it as soon as I can. Long-term readers will recall me saying this five years ago, and I was right then. Maybe next month?



# BYOD – Good or Bad or unknown?

**FIONA TEAKLE** LOOKS AT THE GROWING BUSINESS PRACTICE OF BRINGING YOUR OWN DESKTOP

As companies move to a more flexible work environment, one aspect that has changed dramatically is the idea of being given corporate devices as you enter the company. Companies are shifting from the traditional approach of giving you a laptop/mobile and now expecting you to bring your own device as you start. So what does this then mean for the company, or for you as an individual?

In essence, it means that the company needs to be open to any type of device being attached to its network at some point. People are starting to use tablets more than laptops to complete their everyday jobs, so mobile devices need to be properly managed. BYOD is not something that should be entered into without proper thought and consideration for what you are actually enabling.

If you are willing to implement Bring Your Own Device (BYOD), then you must be willing to trust that your users are going to do the right thing. This element of trust needs to be in place for any BYOD environment to work effectively, or you will end up tightening the security on the device so much that it will no longer be effective. If you have hired that person to keep your business running, you also need to trust that they will behave in the right manner with their devices.

One of the biggest factors to be considered is security. If a device is owned by an employee, then you have less control over what that person does and installs on the device. This means that there may be potential for malicious software to enter the environment and cause virus outbreaks. As we as users have become more reliant on IT, we have also for the most part become less security conscious; generally speaking, people won't think about the impact of installing another application on their phone. If that is the case, what is the potential impact to your business?



Traditional methods of job seeking aren't the only way anymore



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While security is one aspect to consider, another factor that should not be overlooked is the legal aspect of BYOD. As the concept of BYOD is continuing to grow, and is really in its early stages, there are little to no precedents to go on. This is a risk that both the company and the employee need to understand before entering into BYOD. The critical aspect is to ensure as a company you protect against risk to reputation and exercise 'Duty of Care'. In other words, do some research as to where you stand personally if you are an employee using your device for work or where you stand as a company.

Having said that, you need to be secure without being overprotective. Employees are likely to be happier if allowed to use the device they have chosen, as they are likely to be more efficient with that device and also have it on them 24/7. This provides you with an opportunity to engage with them for more hours of the day.

Having a solid BYOD policy in place prior to allowing the connection of devices is critical. This allows the company to clearly set out its expectations of the device use to the employee. Education is crucial, not only of the policy, but how to use the device to protect the company and yourself. It is one thing to have the policy, but how it is enforced is just as important.

Most people have a preference for the type of device they use – especially when it comes to mobile devices, be it Android, iPhone, Windows Phone or, for the few, a BlackBerry. So what is this risk of not

allowing users to have the phone they prefer? If you are sticking to a company-issued device, then you run the risk of disappointing your employee because of the type of device you are making them use. While this gives you greater control of the device from a security point of view, does it outweigh the advantages in the option of BYOD?

The other side of it is this: how can you stop users from using their own device to access company information, such as email? Most email products provide a web link (eg Outlook Web Access to Exchange) to access the company email environment; this means that you may not be in a position to prevent a user's access from a mobile device now. Is this risk being considered and how can you mitigate the exposure to the company?

Allowing BYOD requires a level of professionalism within the company. Membership of the ACS not only shows dedication to professionalism, but means you are expected to follow a code of conduct. This can provide a level of comfort to management as they deploy a BYOD policy.

In essence you need to ensure that you have thought through the process of enabling a BYOD model – which includes, cost, security, legality and support – before jumping in and allowing employees to connect their device to your environment. If your company hasn't considered BYOD or corporate devices then now is the time to start, because chances are they are accessing your environments whether you approve it or not!! ■



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# JON HONEYBALL believes it's time for a radical solution to the Windows-on-Intel problem

“The recent spate of drive-by and zero-day malware for Windows has tested my patience sorely. When my mate Mike was hit yet again by ransomware – which nonchalantly walked straight past his fully-up-to-date, well-known antivirus solution – I could do little but whimper. Yes, it was fixable, but why are we in this position?”

The reality is that Windows on Intel is from another era. I applaud the security work that Microsoft has carried out over the past decade, but much of that work has involved cleaning up the mess it made itself. Allowing Windows XP Home Edition users to use administrator rights for daily work, and large games companies such as Electronic Arts to force users to run games in Administrator mode, was an error. It was a bad idea at the time; with hindsight, it's even more terrifying.

The security software market can't keep up with the torrent of problems that afflict Windows on Intel. It never will, despite the inclusion of incredibly clever engineering, code-profiling, profiling and sandboxing capabilities.

The public knows this, too. We're resigned to having to fix Windows, and it isn't getting easier. If you look carefully, there's no need for any of this. Thanks to the latest round of updates to Office Web Apps, I can do most of what I need in a web browser from any platform, including a locked-down Windows RT or iOS device.

Sure, I don't get the power features – and sometimes these are absolutely necessary. But most of what I do can now be achieved using cloud-

based applications, whether they're from Microsoft, Google or another vendor. Locked-down applications in sandboxed environments such as iOS allow me richness when I need it, or support for fully offline operation. Google should be applauded for its work on locking down Android, and improving things in the Play store.

My phone takes care of most of my multimedia needs. I can take

**“You have to go through the Windows 8 update hell before you can even start on Windows 8.1 – this nonsense has to stop”**

pictures, edit them and send them online without using a PC at all. I can listen to music, and I can create it, too. I can even edit Full HD video on my smartphone, which was a task that only a few years ago required the might of a powerful desktop computer.

Indeed, the more I look, the less I need an Intel-based Windows desktop PC. With the arrival of the significantly improved Surface 2 and Windows 8.1, Windows RT even makes for a credible platform, which wasn't true of the feeble Surface coupled with the half-baked original version of RT. I can't guarantee that the new RT will be totally safe, but it's undeniably certain that it will be more secure and robust than Windows on Intel.

So, has the time come to walk away? The same old problems are still there, and I'm far from convinced that things will get better over the next couple

of years. Yes, Windows 8.1 is more secure than 7, and the 7/64-bit combo is significantly better than Vista, which is better than the security disaster of running XP in the current era.

But being better than what went before simply isn't sufficient. Windows 8 on Intel already reveals how the old bugbear of endless incremental bug fixes will continue to haunt us. It can still take hours, even days, to patch a Windows 8 machine. You can't just slap on 8.1 and ignore all the updates for 8 – no, you have to go through the 8 update hell before you can even start on 8.1. I'm sorry, but this nonsense has to stop.

So, here's my position: I've had enough. I'd like someone to make an ARM-based Windows desktop for the tasks that demand a device better than a tablet, even one stuffed into a dock. Let me move my entire life online and use the excellent tools I can find there. Then allow me to fire up a VM running Intel Windows 8.1 for the occasions when I truly need full-fat Windows. If it becomes infected, I can simply throw it away and restore a backup VM image.

So, that's it then. Windows on Intel has come, conquered and gone rotten. Now, like the Roman Empire, it has collapsed under the weight of its own corruption.

It's time to walk away, say “thanks for all the fish” and start moving Windows Intel desktops and laptops out of the business as quickly as possible. Indeed, for all but high-power workstation requirements, I seriously question whether there's any place for Windows on Intel – either in the home or the office – anymore.



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**Printed by:** Webstar

**Distributed by:** Network Services Company, Australia; Netlink, NZ

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nextmedia

**CIRCULATION:**  
April 2013 - June 2013: 15,175



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