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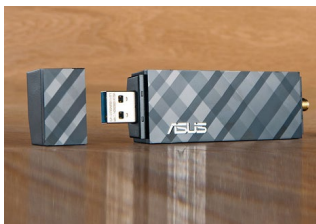
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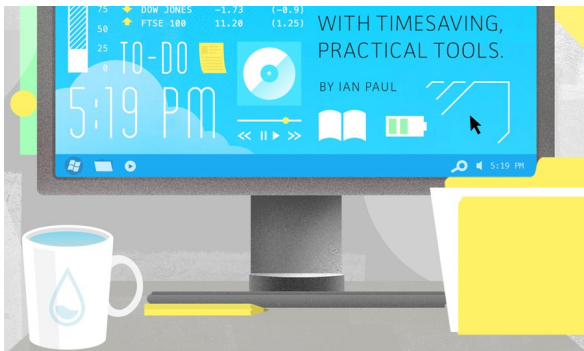


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PUBLICATION INFORMATION

Volume 32, number 10. *PCWorld*™ (ISSN 0737-8939) is published monthly at \$24.95 for one year (12 issues) by IDG Consumer & SMB, Inc. Copyright 2014, IDG Consumer & SMB, Inc. All rights reserved. *PC World* and Consumer Watch are registered trademarks of International Data Group, Inc., and used under license by IDG Consumer & SMB, Inc. Published in the United States.

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Windows 9 rumors: Everything we know so far

Here's what we expect to see on September 30. BY JARED NEWMAN



WINDOWS 9? THRESHOLD? Or just plain Windows? Whatever Microsoft ends up calling its next operating system, it's shaping up to be another big change from the Windows that came before it.

Only this time, Microsoft is looking to appease its user base—especially in the enterprise realm—instead of scaring people away. If the past few months of leaks and rumors are accurate, Microsoft will

undo some of the most drastic changes in Windows 8, but it will also kick off a major transformation for Windows—one that's long overdue.

Microsoft is likely to reveal at least some of these changes at a September 30 event (go.pcworld.com/Sept30). Here's a look at all the details that have leaked so far, and how we expect it all to come together:

Undoing the damage

The biggest changes in Windows 9 will be aimed at desktop users who never wanted the drastic design overhaul of Windows 8. That means desktop users will get their classic Start menu back—it will pop up in the bottom-left corner instead of taking over the entire screen as it does in Windows 8.

As a recent video leak showed (go.pcworld.com/win9vidleak), the order of this menu may be a bit different than it was in Windows 7. Folder shortcuts could move from the right side to the top, essentially switching places with where pinned apps used to be. By shuffling these shortcuts around, Microsoft leaves room for users to pin Live Tiles on the right side of the menu, where they can be resized and reordered in a grid

A leaked view
of Windows 9's
reborn Start
menu.





The Windows Store apps may come to the desktop.

view. (Users who prefer the full-screen Start menu can still switch it on through Taskbar and Start menu properties settings, the video revealed.)

Beyond the Start menu, Microsoft will likely deemphasize the charm bar and the recent app switcher, both introduced in Windows 8. Many charm-bar functions—such as sharing and printing—will get folded directly into the menus of Windows Store apps, and the recent apps sidebar will give way to the classic desktop taskbar. Again, both features will remain available as options according to the latest leaks (go.pcworld.com/win9leakdt), but they won't serve much purpose for desktop users.

An isolated convergence

Microsoft hasn't entirely given up on its plan to have one Windows running across phones, tablets, and PCs. But with Windows 9, Microsoft will likely tweak its original vision, with a separate smartphone (go.pcworld.com/win9sep) and tablet version that emphasizes the modern interface and Windows Store apps.

It sounds like Windows RT all over again, but with some key differences: This version will run on smartphones as well as tablets, and may apply to both ARM-based and Intel Atom-based devices, according to ZDNet's Mary Jo Foley (go.pcworld.com/zdfoley). Most importantly, this version may not include the desktop, potentially eliminating some of the confusion that made Windows RT a nonstarter in the first place. If Microsoft can deliver a touch-friendly version of Office in tandem, it may finally deliver on the promise of simpler touch-based computing that RT never quite fulfilled.

The only question is what all this means for hybrid devices such as the Surface Pro 3 and the Lenovo ThinkPad 10. This is just speculation, but it seems likely that Intel-based hybrids—especially larger models—will get the desktop-centric version of Windows with the option to enable some tablet-friendly features.

Redoing desktop software

It's clear that Microsoft wants to create greater separation between lightweight touch devices and traditional PCs driven by mice, trackpads, and keyboards. But the glue holding them all together will be the Windows Store.

With Windows 8, Microsoft introduced the Windows Store to revamp software around tablets and touchscreens, but this effort didn't go as planned. Between slow adoption of Windows tablets and minimal interest in modern apps from traditional PC users, the Windows Store was soon ignored by major developers and overrun by junk. Microsoft just recently started cleaning up the mess.

Windows 9 will represent a second chance, as Microsoft makes a greater push for Windows Store apps on the desktop. Users will be able to run these apps in windowed or full-screen mode, and they'll have icons along the taskbar just as with any other program. And unlike legacy desktop software, Windows Store apps can take advantage of new features such as the Share charm, Snap view, easier high-definition

Bringing Windows Store apps to the desktop introduces some challenges.

display support, and rich notifications. The store also provides a safe, centralized location where users can download and update software.

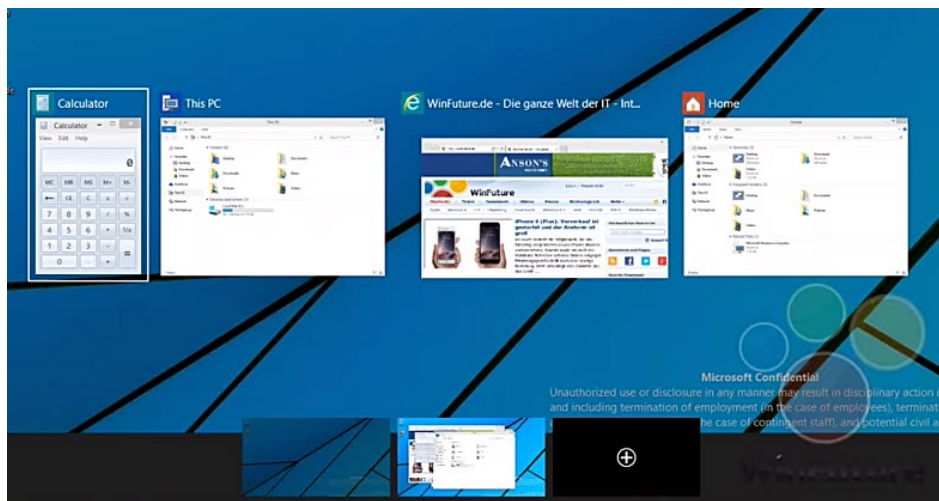
Bringing Windows Store apps to the desktop introduces some challenges. Laptop and desktop users have different needs than phone and tablet users, and Microsoft may need to change the way it curates the store for each group. But if the huge base of traditional PC users takes a liking to these apps, it could make the store more vibrant for everyone, and finally help Windows software move into the modern era.

More bells and whistles, of course

If Windows 9 were only about damage control, it wouldn't make a very compelling upgrade for satisfied Windows 7 users. So it's no surprise that Microsoft is throwing in some new features to get their attention.

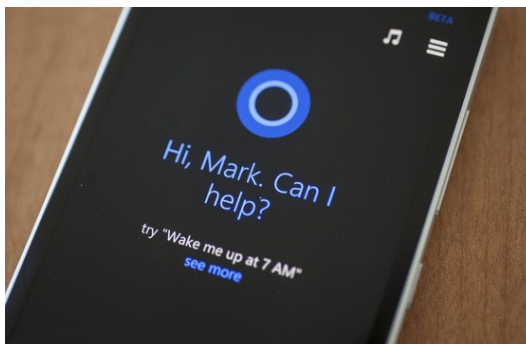
According to recent leaks, virtual desktops will be a major addition in Windows 9. Similar to the Workspaces feature in Ubuntu Linux (go.pcworld.com/ubuntulinux), virtual desktops will let users spread their work across multiple desktops, which will free them from clutter as they move between tasks. Virtual desktops should be controlled

A leaked look
at the virtual
desktop
support being
tested for
Windows 9.



through a window icon on the left side of the taskbar, so users can switch between workspaces with a couple of clicks.

Microsoft may also bring several features from Windows Phone over to the PC side, including the virtual assistant Cortana and a notification center that pops up from the right side of the desktop taskbar. Wi-Fi Sense and Storage Sense could also make the jump from Windows Phone, making it easier for users to get online and free up extra storage space.



Windows Phone's digital assistant, Cortana, could be headed to Windows PCs and tablets.

A fresh start for “Windows”

So far, Microsoft hasn't given a proper name to the next version of Windows. Its code name is reportedly “Threshold,” and “Windows 9” is merely a placeholder name that pundits and the press have been using.

But there's a theory, pushed mainly by The Verge's Tom Warren (go.pcworld.com/theverge), that Microsoft will simply go with the name “Windows.” The idea is that Windows 9 isn't just another upgrade, but the end of the Windows upgrade cycle as we know it. Instead of delivering major paid upgrades every two or three years, Microsoft could switch to a long lifespan of free updates, following the lead of iOS, Mac OS X, Android, and Chrome OS.

With a new CEO and a new mantra (go.pcworld.com/newmantra), Microsoft is clearly looking to wipe the slate clean. Don't be surprised if the name and the business model attempt to break Microsoft from its past, even as the product itself brings back much of what traditional PC users have been waiting for. 



The 'Synapse' mind-controlled dress, by Dutch designer Anouk Wipprecht, is powered by Intel's Edison chip,

Hidden gems of IDF 2014

BY MARK HACHMAN

THE INTEL DEVELOPER Forum 2014 was strangely muted. The company competed for attention with the Apple Watch and other announcements. Also, because Intel had announced its Broadwell technology (go.pcworld.com/broadwell) just weeks before, the anticipation that accompanied many past IDF conferences simply wasn't there.

But that doesn't mean IDF was a bust. Browsing the booths and tech sessions, we saw a surprising amount of technology—such as the Intel Core



M chips that Intel's Kirk Skaugen held up, or the successor to those chips, Skylake.

Stroll the halls with us to see the hidden gems of the show.

12K multimonitor gaming

Remember when a game running at 1024-by-768-pixel resolution was something special? A 2K display is impressive. And the new 4K monitors? Mind-blowing. So why not three monitors?

Yep. Intel showed off a rig running—according to a booth representative—two Haswell-E processors: the 8-core, 16-thread 5960X; and the 6-core, 12-thread 5930K. Combined, the two powered a 12K demo of *Assassins Creed 4: Black Flag*, with three 4K monitors running side by side. Inside the box was a true quad SLI setup using four Nvidia GeForce GTX Titan Blacks, taking up a total of 40 PCI-E lanes. Which is a long-winded way of saying awesome.

NUC, meet the 'half NUC'

Intel's Next Units of Computing offer a tiny little take on desktop computing, squeezing a bare-bones PC inside of something about as small as a package of ramen noodles. And yes, they even include a next-generation Broadwell chip (go.pcworld.com/nextgenbroad).

Intel showed off a gaming rig running three 4K monitors side by side.

But if that's too much, then consider a "half NUC." With an Atom chip packed inside, this is a computer for those who don't want to pay extra for Intel's next-generation Core chips, as cool as they might be.

Intel has installed atmospheric sensors... to better feed its hungry data centers.

Eye in the sky

Some of you may have been tempted to watch *Eagle Eye*, Shia LeBeouf's take on a CCTV society run amok. But the future is here—and it's advertised. Intel showed off a traffic-analytics solution from a partner that could track video of individuals walking down a street or in a parking lot—and apparently make guesses as to their gender and other personal information. Always watching, quietly judging...

Air sensors as squirrel food

Earlier this year, Intel began installing atmospheric sensors in

The iKeg lets you know when it's empty and ready for a refill.



London; Dublin, Ireland; and San Jose, California—the better to feed Intel’s hungry data centers.

The plastic boxes mounted in or near Hyde Park in London ran into two unexpected problems: Insatiably curious squirrels pillaged the boxes, so the researchers began using metal chassis. For the boxes located too close to the street, everything not soldered down was jarred loose by the constant vibration. Squirrels: not exactly a problem that everyone plans for.

The iKeg

Who wouldn’t want a keg that would signal you when empty, and automatically request a replacement after being tapped out? Such was the justification for the iKeg, which Intel showed off at its Developer Forum. It’s research. Yeah.

Dell Venue 8 7000 tablet makes RealSense real

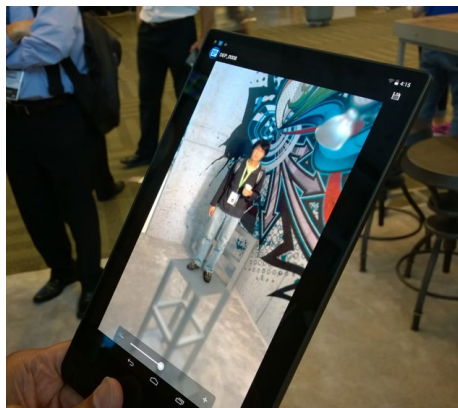
IDF’s celebrity moment occurred when Michael Dell introduced the Dell Venue 8 7000 tablet (go.pcworld.com/dellvenue8rev) onstage. The device also features the first RealSense 3D camera (go.pcworld.com/realsense3drev) integrated into a tablet.

Like the Microsoft Kinect, the RealSense’s dual lenses let the camera see like our own two eyes do—calculating distance and depth.

This 8-inch tablet and its full 2K display are lovely. Intel has developed apps that can “measure” something just by “looking” at it. If this is what we can expect from the next generation of tablets, sign us up.

Kid and Plae

One of the companies that’s going to use the RealSense technol-



The Dell Venue 8 7000 tablet’s RealSense 3D camera can measure things by calculating distance and depth.



ogy is Plae, a manufacturer of custom children's footwear. Plae executives said the company can use the RealSense camera technology to estimate foot size within just a few millimeters, so people may confidently buy shoes over the Internet after they've scanned their feet.

Intel showed off its object-recognition technology.

LenovoPad Tab S8, powered by Merrifield

Intel's next-generation Merrifield chip (go.pcworld.com/merrifield) may not have a future in smartphones, but it can do just fine in a tablet. At IDF, Intel showed off several unreleased tablets powered by Merrifield. The first is a Lenovo tablet, encased in a colorful yellow plastic shell.

A label on the back identified this tablet as the Lenovo "Sparks," which may or may not be a code name.

Intel Health app

Intel has clearly invested time developing its own software to take advantage of its processors' capabilities. Remember, Intel has an entire software division, which it acquired from a company called Wind River a few years back. The Intel Health app it has produced doesn't look half bad.

Intel's phone security technology

A form of Intel's Identity Protection Technology already appears in laptops, and now the company is adding it to smartphones and tablets. Normally, banks will have customers provide a second form of identification by issuing them a dongle, which provides a time-limited security code in addition to a password. Intel's technology uses the smartphone as the token, allowing the user to simply tap a code that's been sent to the phone in order to identify the user to a bank or shopping site.

If wearables are the next big thing, Intel hopes the 'Edison' chip will power them.

Intel's version of Amazon's Firefly

Object recognition is cutting-edge, whether it involves automatically sensing obstacles (go.pcworld.com/wheel) while driving or it's incorporated in a product such as Amazon's Firefly (go.pcworld.com/firefly).

But while Amazon's technology tacitly encourages you to stock up on toilet paper and memory cards, Intel's is much more prosaic: It matches images "seen" by your tablet or smartphone against a database of images. In this sense, it's much more akin to Google Goggles (go.pcworld.com/goggles), a technology that became little more than a curiosity. Will Intel's object recognition do the same?

Intel's Edison chip

If wearables are the next big thing, then Intel hopes the "Edison" chip will power them. At IDF, Intel said that its Edison chip was shipping. Edison, a member of Intel's embedded Quark family of chips, is tiny—about the size of a quarter, complete with motherboard. Intel hopes that wearables makers will pay about \$50 apiece for an Edison chip and development board, that they can use to come up with unique ideas, like...

Don't mess with the dress

This lovely, futuristic 'Synapse' mind-controlled dress is powered by Intel's Edison chip. Designed by Dutch designer Anouk Wipprecht, it's 3D-printed to fit the model's curves. The kicker is that the dress responds to the cues of the wearer: If the dress senses that someone undesirable is approaching the wearer, it flashes a warning.

Synapse, however, is warm milk compared to Wipprecht's spider dress (go.pcworld.com/spiderdress), which unfolds menacingly at the wearer's command. Creepy! 

Google wants to test Internet delivery via drone in New Mexico

BY MARTYN WILLIAMS



GOOGLE IS PLANNING to test Internet delivery by drone high above New Mexico, according to a government filing.

The company has asked the Federal Communications Commission for permission to use two blocks of frequencies for the tests, which are scheduled to last about six months and to begin in October. They will be conducted above an area of more than 1400 square kilometers (about 870 square miles) in central New Mexico, to the east of Albuquerque.

“Google recently acquired Titan Aerospace, a firm that specializes in developing solar and electric unmanned aerial systems for high altitude, long endurance flights,” Google said in its application. “These systems may eventually be used to provide Internet connections in remote areas or help monitor environmental damage, such as oil spills or deforestation.”

Google said its application for temporary permission to make the transmissions was needed “for demonstration and testing of [REDACTED] in a carefully controlled environment.”

The FCC allows companies to redact certain portions of their applications when they might provide too much information to competitors.

In the application, Google said it wants to use two blocks of frequencies, one between 910MHz and 927MHz and one between 2.4GHz and 2.414GHz. Both are so-called “industrial, scientific and medical” (ISM) bands typically used for unlicensed operations.

The application has not yet been approved.

It’s the latest in a series of moves by the company to try Internet delivery from the skies.

The company last year unveiled its ambitious Project, which uses a series of high-altitude balloons that float in winds at about 20 kilometers (65,000 feet) above the earth. The first experiments with Loon involved using a transmission system based on Wi-Fi, but earlier this year the company began experimenting with LTE cellular transmissions (go.pcworld.com/amazonlte) at a test site in Nevada.

Google acquired Titan Aerospace in April of this year for an undisclosed amount of money.

Google could not immediately be reached for comment. 

3 ways Microsoft can ruin Minecraft—and 3 ways it can make it better

BY BRAD CHACOS

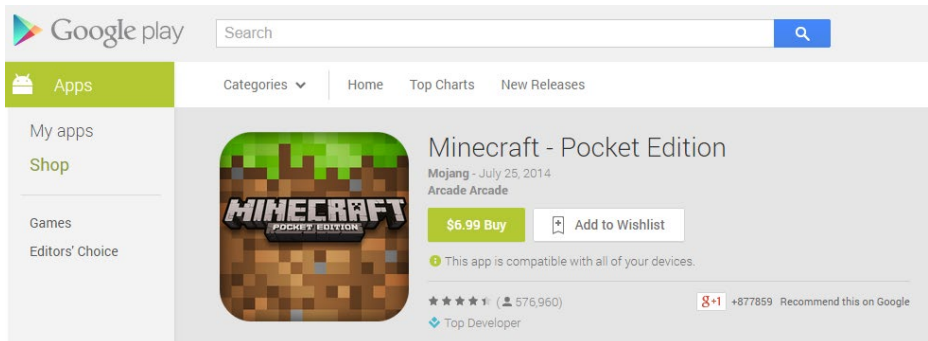
WITH MORE THAN 50 million copies sold, a robust line of toys and other accessories, and a near-endless legion of fan-created YouTube Lets Plays, there's no doubt that indie game *Minecraft* is a colossal hit. Heck, it's a veritable cultural phenomenon. But now, there's reason to question the future of the blockbuster game, as Microsoft has bought

Minecraft maker Mojang for \$2.5 billion. What's more, Mojang founder and *Minecraft* mastermind Markus "Notch" Persson is departing once the deal is complete. (Read his farewell letter to *Minecraft* fans [go.pcworld.com/minecraftthd]).

This is a monumental moment for the future of *Minecraft*: Will Microsoft's structure and piles of cash boost Mojang to ever-more-stratospheric heights, or will the company fizzle out? (And the less said about Games for Windows Live, the better.) It's all in how Microsoft handles it.

Here are three things Microsoft could do that would ruin *Minecraft*—and three things it could do that would make the game even better.





1. Stuff it full of in-app purchases

In an era when so many games are given away for “free,” only to be riddled with in-app purchases that cripple their design, *Minecraft* is a breath of fresh air. Whether you’re on a PC, a mobile device, or a gaming console like the Xbox 360, you pay one flat fee for *Minecraft*, which entitles you to free updates for the life of the game. If Microsoft takes the Electronic Arts route and introduces in-app purchases that unlock the game’s more obscure craftable items or entirely new content, it’ll suck a lot of the magic out of the game’s sense of wonder and exploration.

Minecraft

Pocket Edition is available for both Android and iOS.

2. Restrict the game to Microsoft platforms

Microsoft is saying all the right things for now, promising to keep *Minecraft* alive on competing platforms, including PlayStation, iOS, and Android. Indeed, *Minecraft*’s far-flung availability plays right into newfound Microsoft CEO Satya Nadella’s focus on cross-platform services—a push that has seen Office revealed for the iPad before Windows tablets.

But “plan[s] to continue to make *Minecraft* available across platforms” can easily be changed; witness how Microsoft’s other major game studios focus solely on Microsoft platforms. And even if Microsoft keeps the game alive on other operating systems, there will no doubt be a great temptation to make the Windows and Xbox versions the definitive ones in some way.

Don’t do it.

3. Transform Minecraft into a visually rich productivity tool

Microsoft has to resist the urge to make *Minecraft* into something it's not, and especially to avoid shoehorning the game into Microsoft's overarching productivity focus. If *Minecraft*'s open world can be converted into some sort of visually rich productivity tool, let it come from the community! The game's already been used to make working hard drives (go.pcworld.com/minecrafthd) and to-scale geographical recreations of Denmark (go.pcworld.com/denmark), after all.

But the future isn't necessarily bleak! In fact, Microsoft can bring a lot of good to the open world of *Minecraft*. Here are three ways Microsoft could make *Minecraft* better.

Minecraft's
developer
community is
one key to its
success.

1. Augment it with Microsoft services

Whoa, whoa, don't go reaching for those pitchforks and torches just



yet. Stuffing *Minecraft* with Microsoft services sounds controversial, and it certainly would be if the company made Microsoft services vital to the game. But Microsoft's powerful stable of services could be used to augment *Minecraft* for the better.

Imagine using OneDrive to seamlessly sync your *Minecraft* save files between your various Windows PCs and tablets, for example, or dumping *Minecraft*'s old-school multiplayer chat for something running on Skype's backbone. And switching hosted *Minecraft Realms* servers over to Azure's cloud could be pretty painless—as long as Microsoft doesn't kill off the ability to run custom servers in the process. But make all of those things optional.

Minecraft's small team has been able to thrive under the guiding vision of a few key people.

2. Be the rich uncle

Yes, *Minecraft* is astounding, and it's frequently updated. Nevertheless, the game's development has been handled by a fairly small number of people so far—Mojang has only a few dozen employees. That small team has allowed the game to thrive under the guiding vision of a few key people, but it also limits how much the team can realistically accomplish.

Microsoft could make *Minecraft* better by staying mostly hands-off, but giving Mojang all the financial backing and administrative support it needs to get even bigger. Let Microsoft's team handle all the marketing deals and buy a few more developers to help bang out bug fixes and smaller features. In other words, let Microsoft take over the busywork and let Mojang's best and brightest shine at what they do best.

3. Bring Minecraft to Windows Phone

Speaking of cross-platform availability, we should finally receive a Windows Phone version of *Minecraft* now. Persson was right: Microsoft's mobile platform has too few users to warrant a port from

Mojang's tiny team. But that won't fly now that Microsoft is in charge and facing daily complaints about the Windows Phone app gap. Playing *Minecraft* on a Lumia 1520 would be a joy—just don't sic *Minecraft*'s top developers on the boring conversion process. If Microsoft developed it as a universal Windows app, it would run as a Modern-style app on Windows 8 PCs and tablets, too, despite Persson's hatred of the Windows Store.

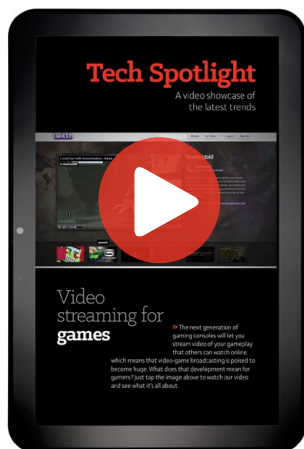
Boom! Just like that there would be a version of *Minecraft* optimized for the whole universe of Windows devices. But at the risk of sounding like a broken record, Microsoft, don't add exclusive features to the Windows Phone version—for the love of all things blocky. 🛑

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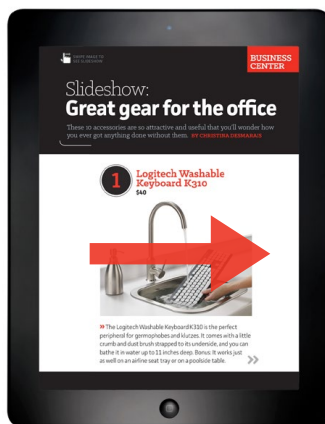
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CONSUMER WATCH

Kaspersky Internet Security—Multi-Device 2015

Secure your PCs,
Macs, and Android
phones and tablets
with Kaspersky's
stellar security suite.

**BY SARAH JACOBSSON
PUREWAL**



GIVEN THAT THE average person owns several Internet-connected devices, a straight PC security program doesn't cut it anymore. That's why companies such as Kaspersky are starting to offer cross-platform solutions that cost only marginally more than traditional PC-only antivirus programs.

Covers five devices

For just \$70 a year, Kaspersky Internet Security—Multi-Device 2015 (go.pcworld.com/kaspersky2015) protects up to five devices, including PCs, Macs, and Android phones and tablets. In addition to antivirus protection, you get some useful Android safety features such as protection against theft and loss, remote management, and automatic app scanning.

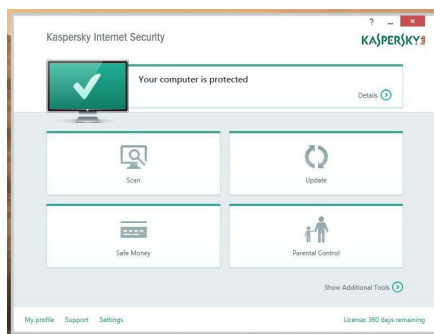
Kaspersky Internet Security remains one of the best antivirus programs on the market. AV-Test, an independent security research institute, found no major differences (go.pcworld.com/avtestaward) between the 2014 version of Kaspersky's software (go.pcworld.com/kaspersky2014rev)—which got our highest score in this year's security showdown (go.pcworld.com/securitysd2014)—and the 2015 version.



Kaspersky's main screen on a Mac.

In AV-Test's real-world tests, Kaspersky Internet Security—Multi-Device 2015 successfully blocked all 31 of the malicious URLs. In the “malware zoo” test, which evaluates a software program's ability to identify and block widespread known malware discovered within the last month, Kaspersky successfully detected and blocked 12,608 samples out of 12,618.

The suite got a perfect score for distinguishing between threats and nonthreats. Performance-wise, the suite is similar to the 2014 software, which had one of the lightest footprints of any of the programs in our recent roundup.



The suite's interface is more polished, but it's still touchscreen-friendly.

Kaspersky Internet Security—Multi-Device 2015

PROS:

- Excellent protection
- Great touchscreen interface

CONS:

- Five-device limit might not be accommodating enough for some people

BOTTOM LINE:

Top-notch, user-friendly protection for your Mac, PCs, and Android devices.

PRICE:

\$70



Redesigned interface

But while the 2015 software offers virtually the same protection as its predecessor, Kaspersky has revamped the interface. It's still very touchscreen-friendly, with large buttons and toggle switches, and larger-than-average checkboxes in the Settings menu, and yet the overall look is more polished.

The main screen features a computer monitor—with a checkmark denoting that your PC is protected and a red X indicating that it's not—and four menu

buttons: Scan, Update, Safe Money, and Parental Controls.

The Scan button takes you to a more-detailed menu where you can run a full scan, a quick scan, or a custom scan; or you can scan your removable drives or set up a scan schedule. Safe Money is Kaspersky's online banking and payment protection software—selecting that button allows you to add a list of websites you want to use with Kaspersky's Protected Browser for extra protection with e-commerce transactions.

Additional tools, which you access via a link in the lower-right corner of the window, include Browser Configuration, a wizard that helps you optimize Web browser settings; Privacy Cleaner, which clears your computer of recent commands and accessed files; and Cloud Protection, which connects you to Kaspersky's Security Network and offers “instant response to new threats.”

Kaspersky always does a great job with its Settings menu, which you can access by tapping the Settings link in the lower-left corner of the main window. It's organized into five categories (General, Protection Center, Performance, Scan, and Additional), and features touch-friendly controls and helpful explanations, even in the advanced settings screens.

The bottom line

Kaspersky's Internet Security—Multi-Device 2015 is easy to recommend if you're a device junkie. Protection and performance are excellent, and it offers a more-polished interface than its predecessor without sacrificing usability. If you're just looking for PC protection, however, you can save \$10 with Kaspersky Internet Security 2015, which costs \$60 for one year of protection for up to three PCs. 🔌



Internet Security—
Multi-Device
2015 is easy to
recommend if
you're a device
junkie.

```

00001180 00 02 00 00 05 00 01 00 00 00 00 00 05 00 01 00
00001190 00 00 00 00 00 d0 32 02 00 02 00 00 4f 4b 00 00
000011a0 02 00 00 01 00 00 10 00 00 10 00 00 00 00 10 00
000011b0 00 10 00 00 00 00 00 00 10 00 00 00 00 00 00 00
000011c0 00 00 00 00 00 c0 32 02 5c 02 00 00 00 00 00 00
000011d0 00 00 00 00 4d 50 00 00 00 00 00 00 00 00 00 00
000011e0 ff ff 00 00 b8 00 00 00 00 00 00 00 00 00 00 00
000011f0 00 00 00 00 0e 10 00 00 00 00 00 00 00 00 00 00
00001200 cd 21 57 69 6e 33 32 20 2e 44 4c 4c 2e 0d 0a 24
00001210 40 00 00 00 50 45 00 00 4c 01 02 00 c3 39 37 53
00001220 00 00 00 00 00 00 00 00 e0 00 02 23 0b 01 0a 00
00001230 00 14 00 00 00 84 32 02 00 00 00 00 5c c2 32 02
00001240 00 10 00 00 00 30 00 00 00 00 00 10 00 10 00 00
00001250 00 02 00 00 05 00 01 00 00 00 00 00 05 00 01 00
00001260 00 00 00 00 00 00 00 00 4f 4b 00 00 00 00 00 00
00001270 02 00 00 00 00 00 00 00 00 00 10 00 00 00 00 00
00001280 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00001290 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

```

The malicious part of the code begins with MZ.

Two significant strings, MPRESS1 and MPRESS2, are added by a packer called MPRESS. This entire MZ (not shown here), is the dangerous part: It makes connections to two IPs in Kazakhstan according to GData's SecurityBlog (go.pcworld.com/gd).

```

.....2.\.....
MZ@.....
.....!..L
..!Win32 .DLL...$
@...PE..L....97S
.....#....
.....2.....\..2.
.....0.....
.....2.....OK..
.....
.....2.
P.....
.....MPR
ESS1..2....."
.....MPRESS2....
..2.....$.
.....

```

Poweliks malware hides in your Registry, not your drive

BY LUCIAN CONSTANTIN

A NEW MALWARE program called Poweliks attempts to evade detection and analysis by running entirely from the Windows Registry without creating files on disk, security researchers warn.

The concept of “fileless” malware that exists only in the system’s memory is not new, but such threats are rare because they typically don’t survive across system reboots, when the memory is cleared. That’s not the case for Poweliks, which takes a rather new approach to achieving persistence while remaining fileless, according to malware researchers from G Data Software.

What the malicious code looks like.

How it works

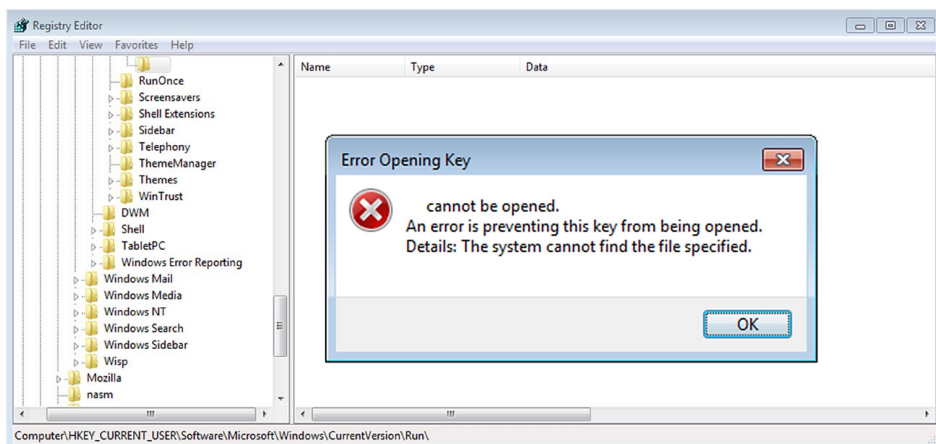
When it infects a system, Poweliks creates a startup Registry entry that executes the legitimate `rundll32.exe` Windows file followed by some encoded JavaScript code. The JavaScript triggers a series of nested actions, in which the attack unfolds step-by-step in the manner of a Russian nesting doll, said Paul Rascagnères, senior threat researcher at G Data, in a blog post (go.pcworld.com/gd).

The JavaScript code checks whether the system contains Windows PowerShell, a command-line shell and scripting environment. If it doesn't, the JavaScript downloads and installs PowerShell and then it decodes additional code that is actually a PowerShell script.

The PowerShell script executes by using a trick to bypass a default protection scheme in Windows that prevents the launch of unknown PowerShell scripts without the user's confirmation, Rascagnères said. The script then decodes and executes shellcode, which injects a DLL (dynamic link library) directly into the system memory.

Once it is running in memory, the rogue DLL component connects to two IP (Internet Protocol) addresses in Kazakhstan to receive commands. It can be used to download and install other threats, depending on the attacker's desires and intentions.

One Poweliks' dirty trick prevents a rogue startup Registry key from being detected.



Unusually elusive

During the entire process, from executing the JavaScript code to the final DLL injection, the malware creates no malicious files on the hard drive, making it difficult for antivirus programs to detect it.

Furthermore, the name of the startup Registry key created by Poweliks is a non-ASCII character. This is a trick that prevents regedit—the Windows Registry editor tool—and possibly other programs from displaying the rogue startup entry, making it difficult for both users and malware analysts to manually spot the infection.

Triggered via spam

Some Poweliks variants have been distributed through malicious Microsoft Word documents attached to spam emails that purported to come from Canada Post or the USPS. The malicious documents exploited a remote-code-execution vulnerability in Microsoft Office 2003, 2007, and 2010 that was patched by Microsoft in April 2012 (go.pcworld.com/mspatch2012). However, according to other reports, the malware is also distributed through drive-by download attacks that use Web exploits (go.pcworld.com/driveby).

To block malware like Poweliks, “antivirus solutions have to either catch the file (the initial Word document) before it is executed (if there is one), preferably before it reached the customer’s email inbox,” Rascagnères said. “Or, as a next line of defense, they need to detect the software exploit after the file’s execution, or, as a last step, in-registry surveillance has to detect unusual behavior, block the corresponding processes and alert the user.”

Security researchers from Trend Micro, who have also analyzed the threat (go.pcworld.com/trendmicropoweliks), believe that other malware creators may adopt the methods used by Poweliks in the future. 🔌



Some Poweliks variants have been distributed through malicious Microsoft Word documents attached to spam emails that purported to come from Canada Post or the USPS.



Three devious ways online trackers shatter your privacy

BY JEREMY KIRK

THREE STEALTHY TRACKING mechanisms designed to avoid weaknesses in browser cookies pose potential privacy risks to Internet users, a new research paper has concluded.

The methods—known as canvas fingerprinting, evercookies and cookie syncing—are in use across a range of popular websites. The findings, first reported by Pro Publica (go.pcworld.com/propublica), show how such tracking is important for providing targeted advertising but that the privacy risks may be unknown to all but the most sophisticated Web users.

Profiling Web users, including tracking the webpages a person has

visited, is a central component of targeted advertising, which matches ads with topics a person has indicated through their browsing that they may be interested in. Targeted ads usually command higher rates than untargeted ads do.

Cookies, which are data files stored by a browser, have long been used to track users' browsing behavior, but a user can easily block or delete cookies, which renders them useless.

The methods the researchers studied are designed to enable more-persistent tracking, but the research raises questions about the degree to which users are aware of how much data about them is being collected.

Advanced tracking techniques

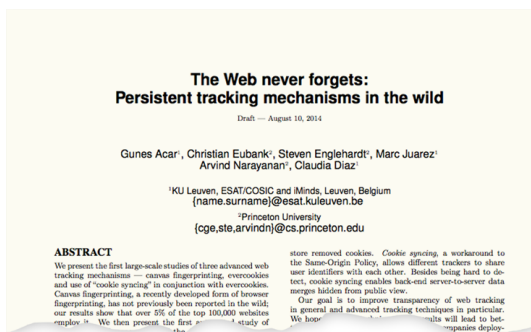
The researchers, from the University of Lueven in Belgium and Princeton University, wrote in their paper (go.pcworld.com/researchers) that they hope the findings will lead to better defenses and increased accountability “for companies deploying exotic tracking techniques.”

“The tracking mechanisms we study are advanced in that they are hard to control, hard to detect and resilient to blocking or removing,” they wrote.

Although the tracking methods have been known about for some time, the researchers showed how the methods are increasingly being used on top-tier, highly trafficked websites.

Canvas fingerprinting

One of the techniques, called *canvas fingerprinting*, involves using a Web browser's canvas API to draw an invisible image and extract a “fingerprint” of a person's computer.



The researchers hope their paper will prompt greater oversight of online tracking.

It was thought canvas fingerprinting, first presented in a research paper in 2012, was not used on websites. But 5000 of the top 100,000 websites (ranked by metrics company Alexa) now employ the technique, according to the paper.

More than 95 percent of those canvas-fingerprinting scripts came from AddThis.com, a company that specializes in online advertising and Web tracking tools.



Some top websites use ‘respawning’, a technique that replaces cookies a user has deleted.

Evercookies

The researchers also found some top websites using a method called “respawning,” where technologies such as Adobe’s Flash multimedia software are manipulated to replace cookies that may have been deleted.

These “evercookies” are “an extremely resilient tracking mechanism, and have been found to be used by many popular sites to circumvent deliberate user actions,” the researchers wrote (go.pcworld.com/evercookies). Respawned Flash cookies were found on 107 of the top 10,000 sites.

Cookie syncing

The third method, *cookie syncing*, involves domains that share pseudonymous IDs associated with a user. The practice is also known as *cookie matching* and is a workaround for the same-origin policy—a security measure that prevents sites from directly reading each other’s cookies. Such matching is helpful for effectively targeting ads and for selling those ads in automated online auctions.

The researchers say that cookie syncing “can greatly amplify privacy breaches,” since companies could merge their databases containing the browsing histories of users they’re monitoring. Such sharing would be hidden from public view.

“All of this argues that greater oversight over online tracking is becoming ever more necessary,” they wrote. 🔒

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He loves video games, and he
owns enough to know they're not
all meant for kids. That's why he
reminds his friends (at least the
ones that have kids) that they all
have **big black letters on the box**
to help parents find the ones that
are best for their families.

You can learn about those
ratings at **ESRB.org**



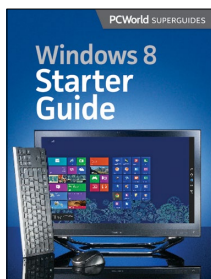
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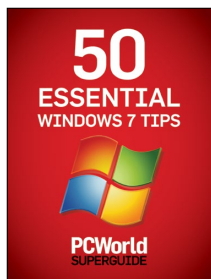
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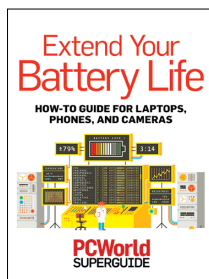
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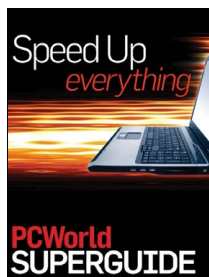
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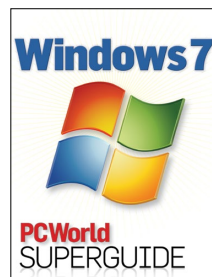
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REVIEWS & RATINGS

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REVIEWS & RATINGS



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com/aceriovid](http://go.pcworld.com/aceriovid).

Acer Switch 10: Right idea, wrong execution

This convertible truly has a split personality. **BY MICHELLE MASTIN**

ACER TRIES TO do Lenovo's Yoga-series laptops one better with its Switch 10 (go.pcworld.com/acerswitch10): This 2-in-1 can fold into tent, presentation, and tablet modes just like those famous convertibles. But you can completely detach Acer's 10-inch display from its keyboard dock to transform it into a true tablet.

You don't need to fumble with a release mechanism, either. Friction

catches and strong magnets hold the two components together, but the magnets are almost too powerful. They're supposed to help guide a pair of sockets on the tablet to posts on the keyboard, but I found myself constantly needing to reseat the tablet, because the magnets seized the dock before I had an opportunity to line them up properly.

To separate the two, hold the keyboard down and give the display a strong tug. The friction catches inside the tablet sometimes take a few seconds to retract, with a disconcerting sound that had me wondering if something had come loose inside the first few times I heard it. With devices that have 360-degree hinges, presentation mode leaves the keyboard facing down against your work surface, while putting it in tablet



You can detach the Acer Switch 10's display from its keyboard dock to make it a true Windows tablet.

mode leaves the keyboard facing out and against your hand.

Reversing the Switch 10's display leaves the keyboard facing up behind it in presentation mode, and flat against the back of the display in tablet mode. Tent mode is also available for those times when your work surface is limited—such as an airline tray table.

This clever design is somewhat undermined by a less-than-awesome display. I suppose a 10.1-inch, 1366-by-768-pixel display is to be expected at the lower end of the tablet price range, but Acer's panel doesn't get particularly bright. It's the only tablet I've used where I felt the need to keep the brightness cranked at all times. The tablet looks bulkier than its 0.35-inch thickness and 1.29-pound weight due to its wide black bezel, with a silver outer frame. Front-firing speakers at the bottom (in notebook or presentation mode) or top (in tent mode) get impressively loud.

Tent mode makes it easy to watch movies in cramped spaces, such as in an airline seat.



The keyboard's keys are small, flat, and surprisingly stiff. My first keystroke failed to register until I became accustomed to its tactile response and learned how hard I needed to strike the keys. The dock is also on the light side, given how heavy the tablet is. It tends to slide around the desk when you tap its display in notebook mode.

The only ports on the tablet are micro and mini versions of USB and HDMI, respectively. The tablet also supports Miracast wireless video streaming if you don't want to mess with using an HDMI adapter to connect the tablet to a stand-alone display. Bluetooth and 802.11 a/b/g/n Wi-Fi round out its wireless connectivity. The

included keyboard dock has a full-size USB 2.0 port, but no USB 3.0.

Acer Switch 10

PROS:

- Easy-to-detach display
- Keyboard faces back of display in tablet mode; faces up in presentation mode

CONS:

- Lots of bezel surrounding the display
- Stiff keyboard keys
- Mediocre battery life

BOTTOM LINE:

The Acer Aspire Switch 10 is a novel take on the 2-in-1 notebook/tablet hybrid, but both the tablet and the keyboard halves of the equation are mediocre, and the tablet's battery life is too short.

\$430



Less-than-dazzling performance

The rest of the Switch 10's specs are standard for the lower end of the tablet range. Acer picked an Intel Atom Z3745 (Bay Trail-class) CPU and paired it with 2GB of DDR3/1066 memory. A 64GB eMMC drive provides the storage, which you can supplement with a MicroSD card. Acer also offers a less-expensive model with only 32GB of storage, but that's really



Unlike with laptops that have 360-degree hinges, you won't feel the keys when you put the Aspire Switch 10 in tablet mode.

pushing the lower limit for a machine running Windows 8.1.

With standard specs comes average performance. The tablet is perfectly acceptable in day-to-day usage, but my usage is not particularly demanding: I used email, Web browsing, YouTube and Netflix, and Office, and all these tasks worked smoothly. The Switch 10 outperformed the Lenovo Yoga 2 11 and the HP Pavilion x360 on the PCMark 8: Office benchmark by virtue of its flash storage, not because it's an inherently more powerful laptop.

Both the Lenovo and the HP Pavilion have mechanical hard drives but faster CPUs, so both of them earned a higher laptop WorldBench scores. And that makes it doubly disappointing that the Acer's battery died 7 minutes sooner than the Lenovo's did (the Pavilion x360's battery life of less than 3.5 hours is, for what it's worth, atrocious).

Buy one, or keep shopping?

If a 2-in-1 with a detachable display is what you crave, I'd suggest taking a look at the Asus Transformer Book T100 (go.pcworld.com/acertbook100). It's a little thicker, but it weighs about the same. More importantly, it has a better keyboard, and the 64GB model has the same street price as the 32GB version of the Acer Switch 10. The 64GB version reviewed here costs \$80 more. 

2014 Razer Blade Pro: A bit better than last-year's model

BY HAYDEN DINGMAN

RAZER'S 2014 BLADE Pro seems to be caught between two hardware generations. While its less-professional cousin, the 14-inch Blade, benefits from an enormous bump in graphics horsepower and display resolution this year, the 17-inch Razer Blade Pro (go.pcworld.com/razerbladepro) looks much the same as it did in 2013.

Razer abided by the “If it isn’t broken, don’t fix it” axiom here. The Blade Pro was a beautiful, sleek, and capable machine in 2013, and all that remains true in its present incarnation.

The Blade Pro ships with an Nvidia GeForce GTX 860M that’s slightly faster than last year’s 765M graphics processor. Nvidia has crammed some new game-related features into the 800M series though: Battery Boost and ShadowPlay.



Watch the
video at
[go.pcworld.
com/razervid](http://go.pcworld.com/razervid).

Battery Boost allows the computer to dynamically adjust the power draw of the GPU to keep games at a steady 30 frames per second (or higher or lower, depending on your preferences). ShadowPlay caters to the YouTube, share-everything obsession of modern players by automatically capturing footage in the background without a

performance hit.

Also under the hood: an Intel i7-4700HQ processor (the same as in last year's model), 16GB of DDR3/1600 memory (twice as much as last year), and a 128GB, 256GB, or 512GB solid-state drive (our review unit was outfitted with a 256GB SSD). There are no other options for more-capacious on-board storage, so digital hoarders beware. Three USB 3.0 ports are on the left side of the machine, along with HDMI, a combo headphone/microphone port, and a gigabit ethernet port. If you prefer to go wireless, the Blade Pro sports an 802.11ac Wi-Fi adapter and Bluetooth 4.0.

In lay terms

So what does all that mean for practical, day-

Razer Blade Pro (Model RZ09-00117)

PROS:

- Gorgeous aluminum chassis
- Relatively thin and light for a 17-inch gaming laptop
- Innovative SwitchBlade user interface (when it works)

CONS:

- The SwitchBlade touchscreen has too much friction to be a good trackpad
- Middle-of-the-road performance
- Only incremental component upgrades from the 2013 model

BOTTOM LINE:

The 2014 Razer Blade Pro is overshadowed by its smaller compatriot, the 14-inch Razer Blade; but its attractive price-to-performance ratio renders it worthy of consideration.

\$2300





The Razer Blade Pro features a large 17-inch display and an all-aluminum chassis.

to-day use? Perfectly acceptable performance that won't take your breath away, but that stacks up fine against the competition on most counts. Razer's machine earned a laptop WorldBench 9 score of 106, which put it just slightly ahead of our reference machine: a Dell XPS 15 with an Intel Core i7-4702HQ and an Nvidia GeForce GT 750M video processor.

The Blade Pro's gaming performance won't blow your mind, either, but it does exceed the 60-frames-per-second threshold that most gamers expect from a gaming rig. The Blade Pro delivered BioShock Infinite at 70.4 fps, with resolution set to 1920 by 1080 pixels and image quality set to Medium. The Blade Pro's battery hung on for a respectable 3 hours, 18 minutes in our punishing battery-drain test.

In short, the Blade Pro's performance is at the high end of the laptop scale, but it's far from the top of the heap.

Weight matters

The Blade Pro weighs in at just 6.6 pounds, and its power supply adds just 1 pound more). And the laptop is a svelte 0.88 inch thick. Those measurements put the Razer Pro in the same class as Apple's



MacBook Pro line, with similar attention paid to aesthetics. And then there's the SwitchBlade.

The SwitchBlade

The SwitchBlade is the feature that sets the Blade Pro apart from the smaller, lighter Blade. It's essentially a low-resolution, touchscreen display embedded in the right side of the keyboard, supplemented by ten LCD buttons. The screen can display just about anything, and you use Razer's software to map context-sensitive commands to the ten buttons above it. You can play a game on the primary display, for instance, and watch a YouTube video, browse Twitter, or chat with your Twitch viewers.

It's a very cool concept, but the compromises Razer had to make to build a device that's both a touchpad and a display culminate in an underwhelming experience. Images look disappointingly fuzzy. And unlike with a genuine touchscreen, you can't use the display as a trackpad while SwitchBlade is active.

Is it for you?

The Blade Pro is a moderately powerful machine designed for the average user, not the hard-core crowd. While I love a laptop that can run games on the highest settings without a stutter, "normal" gaming laptops are portable in name only. The Blade Pro isn't as fast as those machines, but it's a lot easier on my back when I need to hit the road. And it's beautiful. Here's hoping Razer gives the 2015 model the full makeover it deserves. 🔥

All the Blade Pro's I/O ports are on the left side, so righties will need to route the mouse cable around the back of the display.



Toshiba's Encore 2 goes easy on your wallet

BY MICHELLE MASTIN

MICROSOFT SPARKED A RACE to the bottom when it introduced Windows 8.1 with Bing, and Toshiba is leading that race with its Encore 2 (go.pcworld.com/encore2) series, which brings Windows tablets down to the price of mainstream Android tablets. The 10-inch Encore 2 that I tried will set you back just \$270, and the 8-inch version costs just \$200.

How many compromises must you accept at prices that low? Surprisingly few. Although the Encore 2's build quality isn't the best, the tablet is sturdy enough that I wouldn't worry about sliding it into a bag and carrying it around all day. The tablet feels plasticky, but it's light at just 1.2 pounds. And since that weight is concentrated in a

slab measuring only 0.375 inch thick, it feels solid. I could hold it comfortably in one hand for extended periods, and that's something I can't usually say about 10-inch tablets.

The white bezel and champagne-colored back help the Encore 2 stand out in a market full of black and silver. The IPS-panel display delivers a run-of-the-mill resolution of 1280 by 800 pixels, but it boasts good viewing angles. The screen dims enough to be comfortable to look at in dark environments, but you'll want to crank it all the way up to work in a well-lit room.



Most of the Toshiba Encore 2's ports are located on its right-hand side.

Toshiba Encore 2 (10-inch version)

PROS:

- Very inexpensive for its size
- Solid industrial design
- Good battery life

CONS:

- Just 1GB of RAM
- Low-quality camera
- Intermittent touchscreen-response problems

Bottom line: Toshiba made a few compromises in the Encore 2, but it runs Windows 8.1 and Office 365 well enough.

\$270

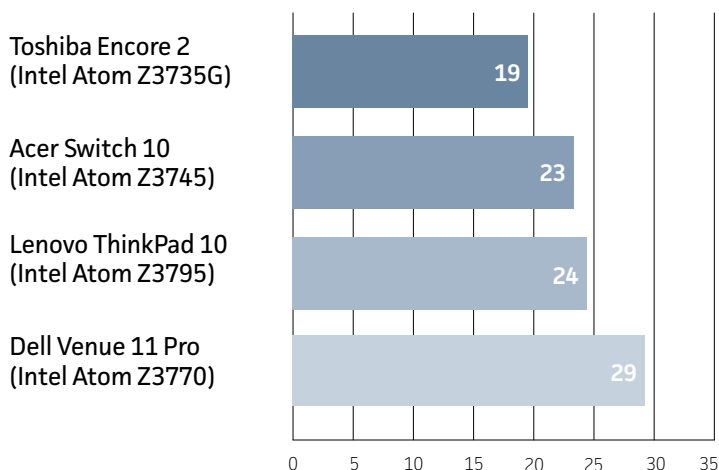


I encountered intermittent responsiveness issues with the touch-screen. A firmware update helped the situation, but the problem never disappeared entirely, and I never could isolate the cause. When the problem became too annoying, a quick reboot generally smoothed things out.

A small Toshiba logo occupies the tablet's front bezel, but Toshiba has replaced the capacitive Start button of the previous-generation Encore with a physical button on the top edge of the Encore 2. You'll also find a volume

Toshiba Encore 2

Laptop WorldBench 9 performance



LONGER BARS INDICATE BETTER PERFORMANCE.

The Encore 2's WorldBench 9 performance lags that of the rest of the test group.

rocker and a power button here. I prefer the real button to the touch-sensitive version, as I'm less likely to activate such a button by mistake.

Stereo speakers on each side work well for video and music playback in a quiet room, and the tablet also has a headset jack for private listening and video calls. A MicroSD slot lets you expand the Encore 2's measly 32GB of storage, and Micro HDMI and Micro-USB ports sit on the same edge. Wireless connectivity includes 802.11b/g/n and Bluetooth 4.0.

Intel's quad-core Atom Z3735G (a Bay Trail-class processor) powers the Encore 2, but the tablet's 1GB of nonupgradable memory leaves me a bit nervous. When is the last time you ran Windows on anything with that little RAM? That said, this tablet runs Office 365 without a problem (Toshiba includes a one-year Office 365 subscription).



In fact, the performance hit as a whole isn't as significant as I expected. The Encore 2 turned in lower benchmark scores than other Windows tablets we've tested, but they weren't drastically lower. And while its PCMark 8 Office score was 22 percent lower than that of the \$430 Dell Venue Pro 11, it was just 14 percent lower than the \$569 Lenovo ThinkPad 10's score.

I used the Encore 2 and a Bluetooth keyboard to write this entire review in OneNote without encountering any significant slow-downs. I also used the Encore 2 as I have every other tablet I've reviewed: I read and wrote email messages, surfed the Web using multiple tabs, streamed Netflix movies, and noodled around small-footprint modern-UI apps. The only difference I noticed is that apps clear out of memory more quickly; that just means apps must refresh if they fall more than four or five places down the queue in the sidebar app switcher.

Full-featured Windows tablets, such as the aforementioned Dell and Lenovo models, can replace a laptop (as long as you add peripherals such as a Bluetooth keyboard). I can't envision Toshiba's Encore 2 that way—it's more of a companion device for light productivity and entertainment. For the price, though, that might be enough. 🖱️

Toshiba moved the Start button to the top edge, next to a volume rocker and power switch.

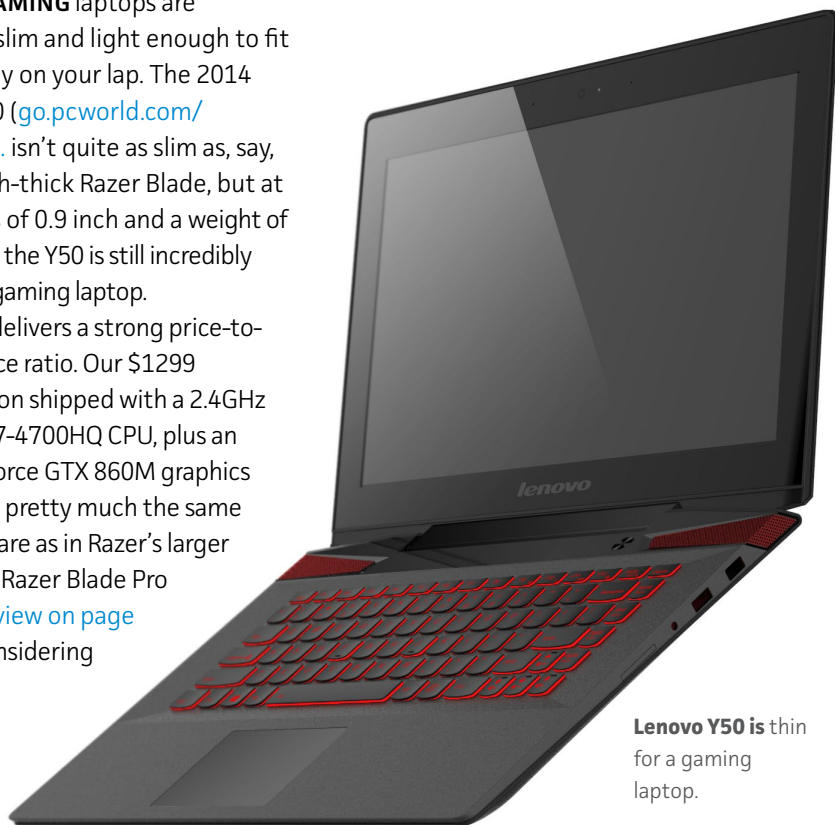
This is more of a companion device for light productivity and entertainment.

Lenovo Y50: Great performance, subpar display

BY HAYDEN DINGMAN

AT LAST, GAMING laptops are becoming slim and light enough to fit comfortably on your lap. The 2014 Lenovo Y50 (go.pcworld.com/lenovoy50). isn't quite as slim as, say, the 0.7-inch-thick Razer Blade, but at a thickness of 0.9 inch and a weight of 5.4 pounds, the Y50 is still incredibly small for a gaming laptop.

The Y50 delivers a strong price-to-performance ratio. Our \$1299 configuration shipped with a 2.4GHz Intel Core i7-4700HQ CPU, plus an Nvidia GeForce GTX 860M graphics card. That's pretty much the same core hardware as in Razer's larger laptop, the Razer Blade Pro ([see our review on page 50](#)). But considering



Lenovo Y50 is thin for a gaming laptop.

that the Razer Blade Pro costs \$1000 more, the Y50 is one of the best midpriced gaming laptops in terms of bang for the buck.

The graphics card features Nvidia's Battery Boost technology, which adjusts the GPU's power draw to keep games at a steady frame rate while putting the lightest load possible on the computer's battery. And Nvidia's ShadowPlay technology allows you to record game footage without a performance hit.

The Lenovo Y50 is one of the best midpriced gaming laptops in term of bang for the buck.

Lenovo Y50

PROS:

- Strong price-to-performance ratio
- Attractively thin brushed-aluminum enclosure
- Good-quality speakers

CONS:

- Abysmal display with limited viewing angles
- Flimsy, awkwardly located touchpad
- Mushy keyboard

BOTTOM LINE:

The Lenovo Y50 is a bargain—provided you can tolerate its subpar display, keyboard, and touchpad.

\$1299



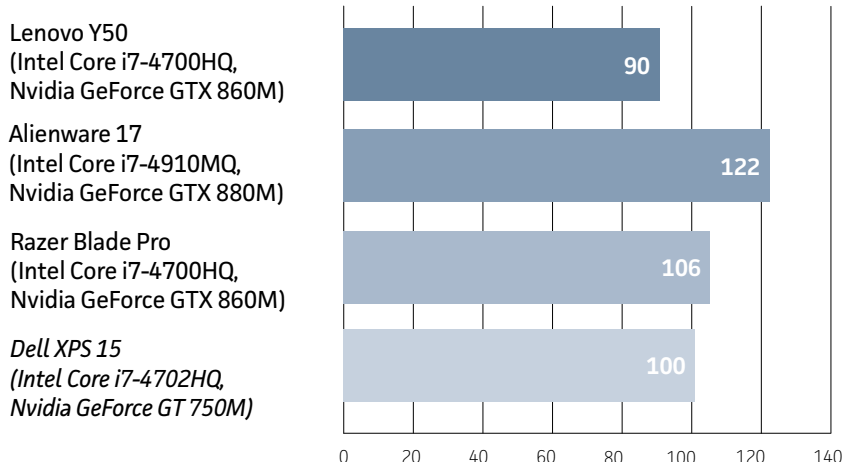
The Y50 comes with 16GB of DDR3L/1600 RAM and a 1TB, 5400-rpm hybrid hard drive with 8GB of solid-state storage. A hybrid drive is better than a purely mechanical one—especially one that spins its platters at just 5400 rpm—but it's still a letdown when most gaming laptops are moving exclusively to SSDs.

Admittedly, SSDs are expensive, so I'm sure this was one of Lenovo's cost-cutting moves.

On the left side are two USB 3.0 slots, an HDMI-out port, ethernet, and the power input. On the right are a USB 2.0 port, a memory-card reader, a headset jack, an S/PDIF audio-out, and a security-lock slot.

Lenovo Y50

Laptop WorldBench 9 performance



LONGER BARS INDICATE BETTER PERFORMANCE. THE BASELINE SCORE IS 100.

The Y50's WorldBench score is 10 percent lower than that of the Dell XPS 15 we've been using as a reference point.

In our Laptop WorldBench tests, the Y50 posted a middling score of 90, lower than the score of 100 for our baseline model (Dell XPS 15, Intel Core i7-4702HQ, Nvidia GeForce GT 750M) and much lower than the Alienware 17's score of 122.

When we moved over to games—which are less restricted by a system's hard drive—the Y50 began to hold its own. Running *Battlefield 4* at 1920 by 1080 and at medium settings, the Y50 churned out a perfectly respectable frame rate of 92.5 frames per second. It's pretty much on a par with the Alienware 17, which generated a frame rate of 98 fps, and it's definitely better than the 60-fps rate most PC gamers consider to be standard.

In the *BioShock Infinite* test, the Lenovo Y50 managed a frame rate of 73 fps, which was slightly better than the Razer Blade Pro's rate of 70

fps but far short of the Alienware 17's 121-fps performance.

The Y50's battery clung to life for 3 hours, 16 minutes—almost exactly the same as the Razer Blade Pro's time of 3 hours, 18 minutes, and about 20 minutes longer than the Alienware 17's battery life.

Substandard screen and keyboard

What allowed Lenovo to create a powerful laptop that sells for less than its competitors? Many, many compromises.

For starters, Lenovo chose an abysmal LCD panel. The 1920-by-1080 display is one of the worst HD screens I've ever used. It's dim, it's lousy at color reproduction, and it looks even worse from slightly off-axis. The screen is so ugly and blurry that I found myself not wanting to use the laptop even to watch movies, let alone play games.

The keyboard's red backlighting is attractive, and the keys have a soft and silky finish. By shrinking the keys to squeeze in a numeric keypad, however, Lenovo made typing a pain. The Enter key and the right Shift key aren't liable to give you problems, but the comically small Backspace key probably will. The keys feel a bit mushy, too; despite how little they need to travel to register, I dropped strokes with regularity.

The touchpad is annoying. Because it's off-center, I couldn't help dragging my left palm or the heel of my thumb across the touchpad

The Lenovo's display is one of the worst HD screens I've ever used.

The full-size gigabit ethernet jack has a spring-loaded, hinged jaw.





Lenovo worked with JBL
on the speaker design.

while typing. Even when I could refrain from accidentally triggering the cursor while hammering out a Word document, the recessed touchpad made for an uncomfortable palm rest. And when you click the rather loose bottom left and right edges, they produce a squawking noise. The whole contraption feels flimsy.

On the bright side, the Y50's speakers pump out decent audio with better bass response than the typical treble-heavy laptop speakers deliver. Manufacturers building computers that retail for much higher prices could learn a thing or two from Lenovo's partnership with JBL.

Lenovo's Y50 is a great choice if you're looking for a portable gaming rig on a budget. If you can't tolerate the trade-offs Lenovo made, however, consider spending more money on a competing offering. 🔌

Matias Secure Pro: A power tool for the paranoid

BY HAYDEN DINGMAN

ALTHOUGH THE \$170 Matias Secure Pro (go.pcworld.com/matiassecpro) wireless keyboard's number one claim to fame is its 128-bit AES encryption (more about that later), I have to say it's more notable for being quiet. You'd hardly know this was a mechanical keyboard from what little sound it makes. The noise level is close to that of a typical membrane keyboard, just a bit sharper or clickier at times. You could use this rather pricey keyboard in an office or a bedroom without disturbing a soul.

I'm not a huge fan of typing on it, however. Instead of providing the ergonomic relief I expect from a mechanical keyboard, the switches inside the Secure Pro tire out my fingers. Activating a key on the Secure Pro reminds me of using a rubber-dome keyboard: Significant resistance at the top begins to yield only as you push past that initial

The Secure Pro is compact, quiet—and pricey.



hurdle. Even if you like high resistance in your keyboards, you'd probably be better served by a buckling-spring switch, which spreads resistance out over the path of the entire keystroke. I

appreciated the muted click of the keys, as that provided some tactile feedback, but this isn't the sort of keyboard I'd pick up for day-to-day use.

More troubling is that I constantly made typos with the Secure Pro. I don't know whether it's because the activation point is so high or because the resistance is so strong, but I dropped letters from my

words regularly, and the spacebar was particularly temperamental.

I also encountered a few issues with the keyboard's 200MHz polling rate. Even though 200MHz is fine for most low-intensity uses, I did notice a slight lag while gaming. That's to be expected from a wireless keyboard, and it explains why most gaming keyboards are wired.

The Secure Pro is highly portable. While it's a bit heavy for its size, I could see myself taking this keyboard on the road. It's hard to convey how small it is, even for a keyboard without a dedicated numeric keypad. The keys aren't as cramped as those on the typical

This isn't the sort of keyboard I'd pick up for day-to-day use.

Matias Secure Pro

PROS:

- Solid construction
- Long-lasting battery
- Portable

CONS:

- Mechanical switches feel more like rubber domes
- Cramped key layout
- Scattered media-player controls

BOTTOM LINE:

This quiet, compact, wireless mechanical keyboard boasts an over-the-top security feature. Its switches have high resistance, though, and it's expensive.

\$170



laptop, but they are closer together than a standard desktop model's. Even after a few days of use, I had difficulty getting my fingers properly aligned without looking down.

I was disappointed with the awkward spacing of the media-control keys. You must hold down the Fn key to operate them, and the Play/Pause function sits all the way across the board on the Esc key. The spacing makes it easier to remember which media functions are where, but quickly operating them one-handed is almost impossible.

The Secure Pro has USB hubs on its casing, but they're strictly for charging—no mouse connections or data transfers here. Matias claims that, on a single charge, the battery will last six months to a year. Charging a second USB device requires supplemental power (thus negating the keyboard's wireless feature). A handy battery-indicator LED



The volume
buttons share space
with the arrow keys.

sits on the Caps Lock key, but the keyboard strangely lacks an indicator LED for the status of Caps Lock itself.

As for the keyboard's touted 128-bit AES encryption: When was the last time you worried about someone intercepting the data traveling from your wireless keyboard to your computer?

For me, the answer is never. Wireless-keyboard signals are so weak that a miscreant would need to be in the same room—or at most, the next room over—to intercept the transmissions. What's more, Logitech, Microsoft, and other manufacturers build wireless keyboards with signal encryption without boasting about it.

Your keyboard is highly unlikely to be the failure point in your data-security scheme, but I won't make fun of people who genuinely worry about such threats. If you're in that camp, the Secure Pro seems to hold up its end of the bargain: Matias claims that the keyboard's 128-bit AES encryption is the highest available on a wireless keyboard and would take "a billion-billion years to crack."

The Matias Secure Pro is a well-built, quiet, portable mechanical keyboard with a robust—if perhaps excessive—security feature. The typing experience isn't to my taste, but your preferences might differ. 



The Matias Secure Pro's two USB ports are just for charging.



Watch the
video at
[go.pcworld.
com/nhawkvid](http://go.pcworld.com/nhawkvid).

REVIEWS
& RATINGS



Netgear Nighthawk X6: Best router for a crowded house

BY MICHAEL BROWN

IS IT EVER the perfect time to buy a new product? I'd say no, because there's never a perfect time to review a new product, either. There's always something right around the corner that promises to be faster, better, cheaper. But you won't know if those claims are true until someone tests them.

Case in point: I spent the first half of the week I devoted to this review benchmarking Netgear's Nighthawk X6 Wi-Fi router—aka the Netgear R8000 (go.pcworld.com/nighthawkx6). Benchmarking takes time, as does analysis and writing. Asus decided to ship its all-new RT-AC87U Wi-Fi router on Wednesday of that week, and my eval unit showed up after that. Is it better, faster, cheaper than the Nighthawk X6? Right now, all I know is that it costs \$20 less than Netgear's router despite its status as the first "Wave 2" 802.11ac router (that means it



The Nighthawk X6 bears an uncanny resemblance to a facehugger from Ridley Scott's sci-fi classic "Alien."

supports multiuser MIMO, which you can read all about in this story).

The Nighthawk X6 does not support MU-MIMO, but it does have a strategy for supporting lots of wireless clients. Netgear describes it as a "tri-band" router, which is a bit of a stretch. It still operates on only two frequency bands—2.4GHz and 5GHz—just like its high-end competitors, but this router is unique in that it has three Wi-Fi radios to support three independent wireless networks. Here's the rest of what I know.

The Nighthawk X6 is not the fastest router I've tested. That distinction still belongs to the Linksys WRT1900AC (go.pcworld.com/linksyswrt). (Again, I have not yet benchmarked the Asus RT-87U.) And if your wireless network streams video to just one or two devices, you probably don't need a router with the Nighthawk X6's advanced capabilities.

But if your wireless network needs to support several PCs, tablets, smartphones, TVs, and other devices—plus legacy devices on the 2.4GHz band—and you’re experiencing lag, dropouts, or other connectivity problems when several clients are streaming media at the same time—Netgear’s router is just the ticket. As such, the Nighthawk X6 is the first 802.11ac router I’ve tested that has the potential to displace the 802.11ac router you might already own.

Netgear Nighthawk X6

PROS:

- Delivers very high throughput to multiple 802.11ac clients
- Long list of networking and media-streaming features
- High throughput to an attached USB 3.0 hard drive

CONS:

- Not the fastest 802.11ac router when servicing just one client
- Overkill for homes with less-demanding needs
- Very expensive

BOTTOM LINE:

The Nighthawk X6 isn’t for everyone, but if you need to support lots of 802.11ac clients, this is the best choice—for now.

\$300



What makes it so special?

As I said in the opener, the Nighthawk X6’s primary claim to fame is its three discrete Wi-Fi radios. Out of the box, it uses one SSID for its 2.4GHz network (for 802.11b/g/n clients) and one SSID for both of its 5GHz networks (for 802.11a/n/ac clients). As you know, so-called first-wave 802.11ac routers like this one achieve massive bandwidth by bonding two 40MHz channels to create one channel that’s 80MHz wide.

In order to avoid having the two networks step on each other, the Nighthawk X6 bonds two channels at the lower end of the 5GHz spectrum and two channels at the higher end (the higher channels deliver more

power). When you begin connecting wireless clients to the common SSID, the router automatically assigns each client to the most appropriate network. (You can also override this and assign the two 5GHz networks different SSIDs.)

Your router's speed won't make your Internet connection any faster.

Netgear's Smart Connect feature first determines if the router needs to perform any load balancing. If the number of existing clients on each network is greater than three, the router will connect the next new client to whichever network has the fewest commitments. If there are fewer than three clients on each network, or the numbers are equal, the router examines the client's speed and assigns new 802.11a, 1x1 802.11n, and 2x2 802.11n clients to the higher-power 5GHz channels (channels 148 through 161). I tested the router using channels 6 and 10 on the 2.4GHz band, and channels 44 and 48 and channels 153 and 149 on the 5GHz band.

The router also evaluates each client's signal strength, pairing clients with weak signals to the high-power channels and clients with strong signals to the low-power channels. If Smart Connect determines that load balancing isn't necessary, the router automatically assigns 802.11ac and 3x3 802.11n devices at short range to the low-power channels and any 5GHz devices at long range to the high-power channels.

The Nighthawk X6 delivers throughput up to 1.3 gigabits per second (gbps) with 3x3 clients on each of its 5GHz networks, and it supports 256 QAM encoding on the 2.4GHz frequency band to deliver throughput up to 600 megabits per second (mbps) with 3x3 clients that support 256 QAM. The equation $(1300 \times 2) + 600$ equals the AC3200 marketing number Netgear emblazons on the router's box.

Does that mean you can expect to see your wireless network deliver throughput of 3200 mbps? Heck no, that's just the sum of the wireless throughput on all three networks. And those are theoretical numbers that don't take protocol overhead and a lot of other things into account. You'll never see actual performance that high. Your router's speed won't make your Internet connection any



The Nighthawk X6 relies on a massive inline power supply).

faster, either. The reason you might want to upgrade to a new router is to boost the speed of your home network.

Feature set

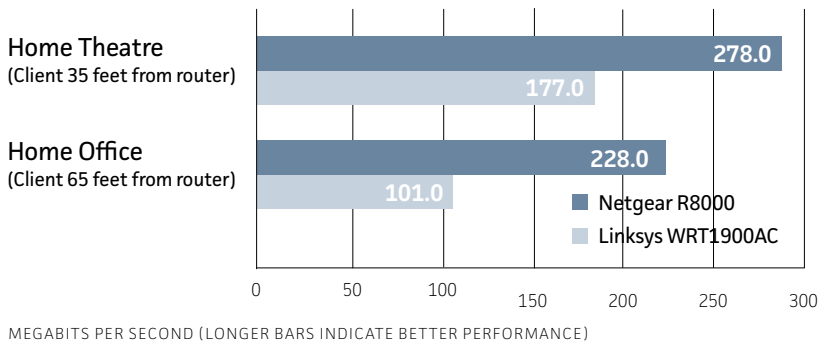
The Nighthawk X6 puts on quite a show, with dual-color LEDs reporting the status of power, Internet connectivity, its three Wi-Fi networks, its two USB port connections, and its ethernet connections (it has a four-port gigabit switch and a gigabit WAN port). If that's too much light pollution for you, flip the toggle switch in the back to turn them off. Buttons on top of the router enable WPS and toggle the Wi-Fi radios off and on (to save power, or to button down your network while you're on vacation).

Netgear packed this router with all the features you'd expect to find in a high-end model, but it's unprecedented in using six MIMO antennas (each of its three networks supports three transmit streams and three receive streams). The articulated antennas can fold flat against the top of the router's enclosure or lift up and away. I set them at a 90-degree angle to the top of the router for my tests. They don't feel particularly sturdy, so keep the Nighthawk X6 out of the reach of curious toddlers.

The router itself you can either lay flat on a horizontal surface or you can mount it to a wall. It relies on an inline power supply that's bigger

Netgear Nighthawk X6 (R8000) Review

802.11ac performance simultaneously serving two clients on separate wireless bridges



The X6 shines when streaming data to two clients on two networks simultaneously.

than what comes with many laptops, but I much prefer a brick like this over an outlet-hogging wall wart.

There's one USB 2.0 and one USB 3.0 port on its back panel, so it can share both a printer and a storage device on your network. Netgear's ReadyShare technology makes it easy to map an attached hard drive to Windows, and the company's ReadyShare Vault software lets you establish an automatic backup schedule for your client PCs (Apple's Time Machine technology is also supported).

But you must decide if you want to use the attached drive for shared storage or for backup—it can't do both. If you use it for storage and need to access it from outside your home network, Netgear's DNS service lets you create a customized URL for an FTP server. VPN support is there, too.

DLNA and iTunes servers make it easy to stream music, photos, and video to client devices inside your home. And Netgear supports cloud-based parental controls, if you're into that sort of thing. (Powercloud's Skydog router had the absolute best parental

controls, although they were trapped inside old-school hardware. But that's a moot point now, as Comcast recently acquired the company and put an end to the Skydog.)

Like the Linksys WRT1900AC, the Nighthawk X6 supports both implicit and explicit beamforming, so it can shape its spatial streams to find the best paths to its clients, regardless of whether those clients support beamforming. You can create a guest network to allow visitors Internet access while restricting them from accessing any networked computers, devices, or storage.

Where the Nighthawk X6 earns its keep

I tested the Nighthawk X6 eight ways from Sunday, and it earned first-place finishes in only two scenarios. That doesn't mean it's a weak router, because it boxed the Linksys WRT1900AC around the ears when it came to servicing two clients attached to different 802.11ac wireless bridges at the same time. But if you need a router to serve just a few wireless clients, you don't need to spend this much dough. Indeed, you won't see the Nighthawk X6's true power until you connect many clients to its networks.

To see how well it would perform with lots of clients, I paired two servers with two clients connected to two separate Netgear R7000 routers configured as 802.11ac wireless bridges. I then streamed data between the pairs simultaneously. I didn't have time to test all the routers in my inventory this way, and I didn't test at all four of the locations where I usually test, but I did compare the performance of the Linksys WRT1900AC (the fastest router I've benchmarked) at the two farthest locations (my home theater and my home office).

When I streamed data to one client connected to a wireless bridge in the home theater, and to a second client connected to a wireless bridge in the home office at the same time, the Nighthawk X6 was 126 percent faster streaming data to the client in my home office, and 57 percent faster streaming data to the client in my home theater. Why? Because the Linksys must support both wireless clients using the same slice of radio spectrum, while the Netgear can support them



using two independent slices. To put it simply, the clients must compete for bandwidth on the Linksys router; they don't on the Netgear router (at least not until you add more clients to the mix).

The question I can't answer today? Does the MU-MIMO feature in the Asus RT-AC87U do a better or worse job of supporting multiple wireless clients. Stay tuned.

You'll find all the I/O ports you'd expect to find on the back of a high-end router.

More performance numbers

To squeeze maximum performance from an 802.11ac router, you need a client device that has the same capabilities. Configure a second 802.11ac router as a wireless bridge, connect it wirelessly to the primary router, and you can add up to four wired clients to the bridge's Ethernet switch. Netgear provided two of its Nighthawk R7000s so I could test the Nighthawk X6 this way.

For one client wired to a Nighthawk R7000, which was, in turn, wirelessly connected to the Nighthawk X6, TCP throughput markedly trailed the numbers I saw when I tested the Asus RT-AC68U, Netgear's Nighthawk R7000, and Linksys's WRT1900AC (with matching routers configured as wireless bridges). TCP throughput of 500-plus mbps over a wireless connection is nothing to sneeze at, but the other four router/bridge combos were even faster.

I then plugged an Asus USB-AC56 Wi-Fi adapter into the laptop to test the router's 802.11ac performance in a more convenient

scenario (a wireless bridge must be plugged into an AC outlet, while a USB adapter draws power from the laptop). The USB-AC56 is a 2x2 client adapter, meaning it supports only two spatial streams for transmitting and two for receiving. It won't take full advantage of a 3x3 router, but it's the best portable outboard Wi-Fi adapter I know of. Interestingly enough, the Nighthawk X6's 5GHz network beat the original Nighthawk (aka the Netgear R7000) in two rooms and came within 3 mbps of matching it in my home office. The Nighthawk X6 once again seriously underperformed when the client was in my home theater.

In 2.4GHz 802.11n mode, the Netgear turned in solid performances in three of my four test locations. But it trailed the field by a wide margin when the client laptop was in my home theater. The laptop is equipped with an Intel Core i5 CPU, 4GB of memory, and an Intel Centrino Ultimate-N 6300 Wi-Fi adapter, so I expected a much stronger performance at this location (Netgear's older Nighthawk—the R7000—delivered 105 mbps here).

For my final benchmarks, I evaluated how fast each router can read and write data on an attached USB 3.0 hard drive. The Linksys WRT1900AC won this round, but the Netgear Nighthawk X6 finished a strong second.

Is this the router for you?

The Nighthawk X6 is the most expensive Wi-Fi router I've tested. Is its lofty price tag justified? It is if you need a Wi-Fi router that can support lots of wireless clients at the same time, especially if you frequently stream media to more than one device at the same time. The Nighthawk X6's generous feature set is also a major draw.

If your wireless networking needs aren't as robust, the Nighthawk X6 is overkill. The Linksys WRT1900AC is faster with a single client, and it costs less. The same is true of the older Netgear Nighthawk R7000 and the Asus RT-AC68U. My opinion might change once I've had a chance to benchmark the Asus RT-AC87U, but the Nighthawk X6 is the most powerful Wi-Fi router I know of today. 📶

How many light bulbs does it take to change an American?



It's no joke: climate change is a critical issue for all life on Earth. But can the actions of one individual really make a difference? Visit nature.org to calculate your impact on the world around you and learn about steps you can take to make the world a better place for us all.

nature.org/calculate

The Nature
Conservancy 
Protecting nature. Preserving life.™



POWERFUL WEBSITES

THAT CAN REPLACE DESKTOP SOFTWARE

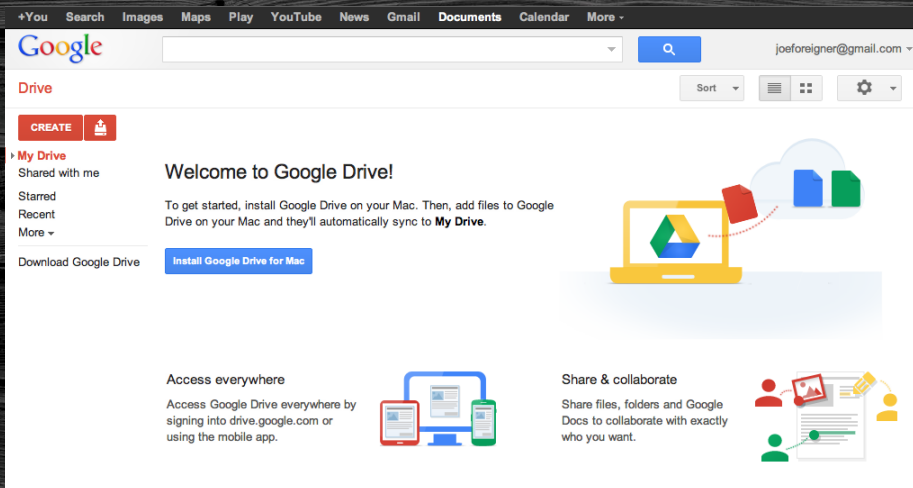
These days, even heavy-duty tasks like video editing can take place solely in your browser. These 12 sites will enhance your productivity, creativity, security, and more.

By Brad Chacos

Browsers get brawny

The World Wide Web isn't what it used to be, and when it comes to getting things done anywhere and everywhere, that's a good thing. Once, the idea of working in your browser was nothing more than a pipe dream. And the idea of completely replacing desktop software with online alternatives? Ridiculous!

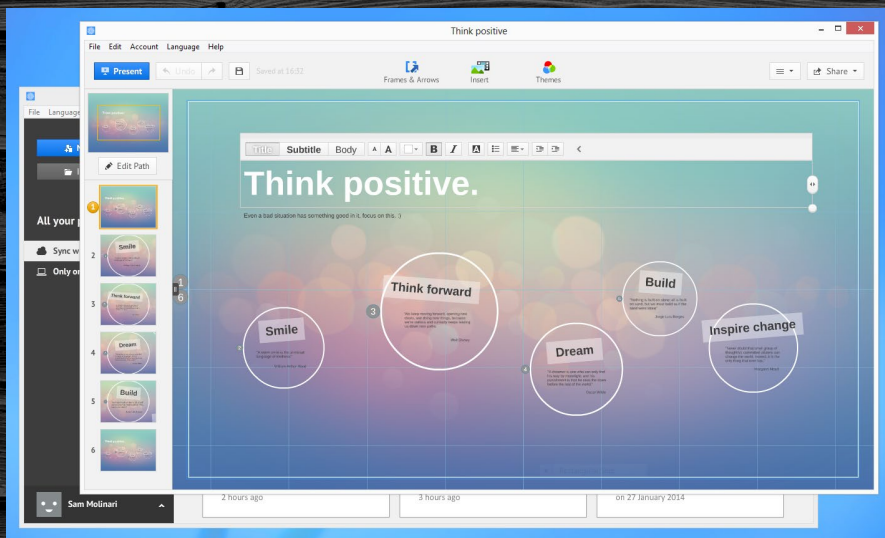
No more. Between the rise of broadband and robust Web technologies like HTML5, modern browsers (go.pcworld.com/amazingbrowsers) are capable of amazing things, and shifting your workload to the cloud is a very real possibility for many people. Whether you're using a Chromebook, looking for good occasional-use tools, or hoping to ditch the hassles associated with stand-alone software, these 12 sites can replace your traditional desktop applications.



Google Drive

We might as well get this old standby out of the way early. Google's suite of Drive productivity apps (go.pcworld.com/googledrive), composed of separate tools for documents, spreadsheets, presentations, forms, and drawings, aren't as full-featured as Microsoft Office. But they're more than powerful enough for the average user, and Google continues to add handy features—most recently, Suggested Edits (go.pcworld.com/suggested), which plays nicely with Office's track changes (go.pcworld.com/trackchgs)—finally. Plus, Drive's collaborative features (go.pcworld.com/collab) can't be beat.

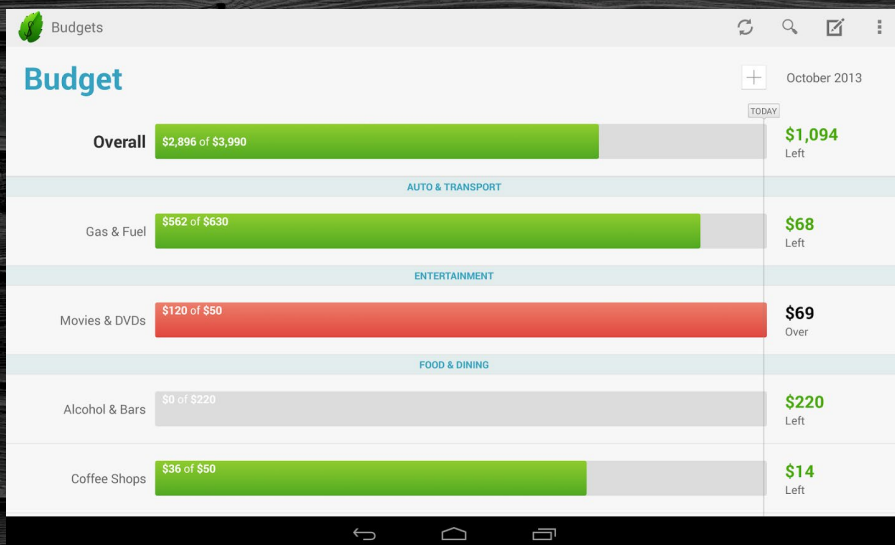
If you can't shake your passion for the Office aesthetic, Microsoft offers Office Online, a stripped-down version of the Office suite you know and love.



Prezi

Let's face it: As ubiquitous as they are in the workplace, traditional presentations are *boring*. Prezi (prezi.com) turns this stale state of affairs on its ear by reimagining presentations as lush, wide-open visual canvases, allowing you to zoom and pan around from point to point. It's fun to use and utterly gorgeous to see in action. When's the last time you heard that about a PowerPoint slide?

Check out PCWorld's review of Prezi (go.pcworld.com/prezirev) for more details, including its various pricing options. Yes, there's a free tier, but be warned: All free-tier presentations are publicly visible and you are limited to 100MB of cloud storage.



Mint.com



How potent are Mint's (www.mint.com) Web-based personal finance tools? So powerful that Intuit, the maker of Quicken, bought Mint back in 2009 to prevent the rise of a potential rival. Fortunately, Intuit didn't shutter the free Mint service, which syncs with your bank accounts to help you track your spending and budget accordingly, complete with graphs to visualize just how much you spend on to-go coffee each month. The site can also send you alerts when your account balances are low, when suspicious purchases pop up, or when you need to pay your bill. Heck, it'll even keep track of your Bitcoins (go.pcworld.com/mintbitcoin).

In short, Mint is great. Read PCWorld's head-to-head comparison of Quicken and Mint (go.pcworld.com/quickenvsmint) for more details.



SHA256: 43792552d7c604c4ba8518a0d1d9deadeeb1f2ef012deb8c22acd554306f701b
 File name: chip_processor-100022200-gallery.jpg
 Detection ratio: 0 / 54
 Analysis date: 2014-07-30 19:18:10 UTC (0 minutes ago)



Analysis

Additional information

Comments

Votes

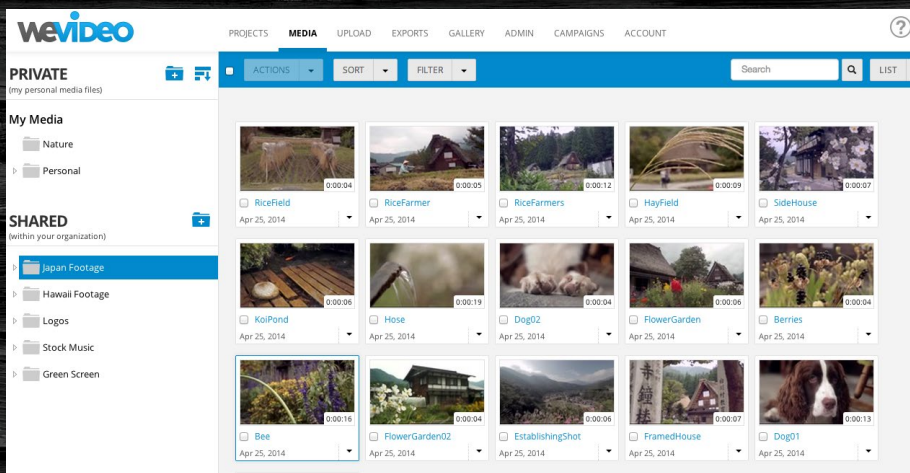
Antivirus	Result	Update
AVG	✓	20140730
AVware	✓	20140730
Ad-Aware	✓	20140730
AegisLab	✓	20140730
Agnitum	✓	20140730
AhnLab-V3	✓	20140730

Virus Total



irus Total (www.virustotal.com) can't quite replace traditional antivirus software, but it can come close, especially if you're using a Windows-free Chromebook. After you upload a file to this extremely useful site, Virus Total scans it for viruses using dozens of antivirus engines, website scanners, and other tools.

If Virus Total says a file is clean, it's clean. It can check the security of websites when you point it toward a specific URL, too.



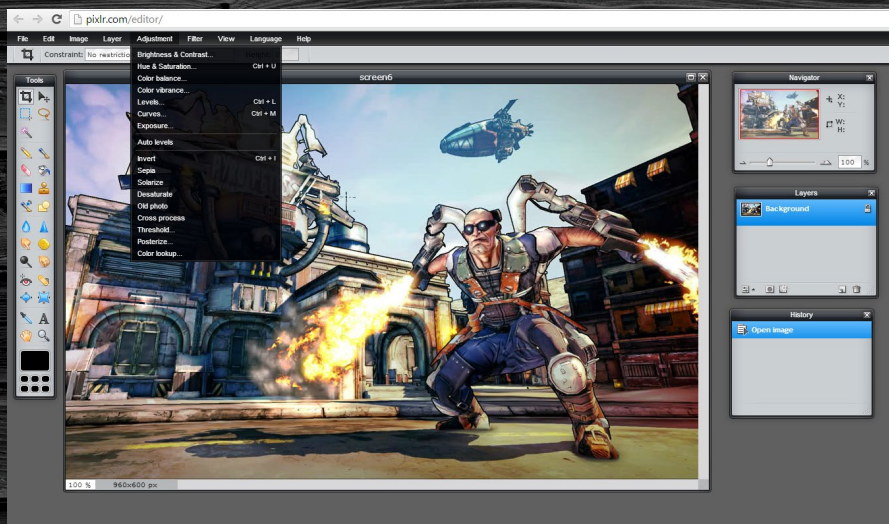
→ WeVideo



es, you can even edit video in your Web browser now, which could come in handy if you're using a Chromebook or a friend's PC. Sure, WeVideo (www.wevideo.com) has some limitations—watch out for that standard-definition resolution on the free account—but all in all, it works successfully and straightforwardly given its Web-based nature.

The Dropbox integration and deep collaborative features are especially nice touches—well suited to a cloud-based video editor. If you plan to use the service fairly often, you'll definitely want to spring for a premium subscription.

Read PCWorld's review of WeVideo for more details (go.pcworld.com/wevideorev).



→ Pixlr Editor

If you need to tweak an image, Pixlr Editor (go.pcworld.com/pixlr) is your Web app. This graphics-editing tool isn't quite Photoshop, but it's far more powerful than the Paint program that comes preinstalled on PCs, with a wide array of tools, filters, adjustment options, and yes, even layers. You can start from scratch with a blank canvas or tinker with images stored either on your local hard drive or on a website. Plus, you can save local copies of your work.

To be honest, it's shocking that a graphics editor this powerful is this, well, free.



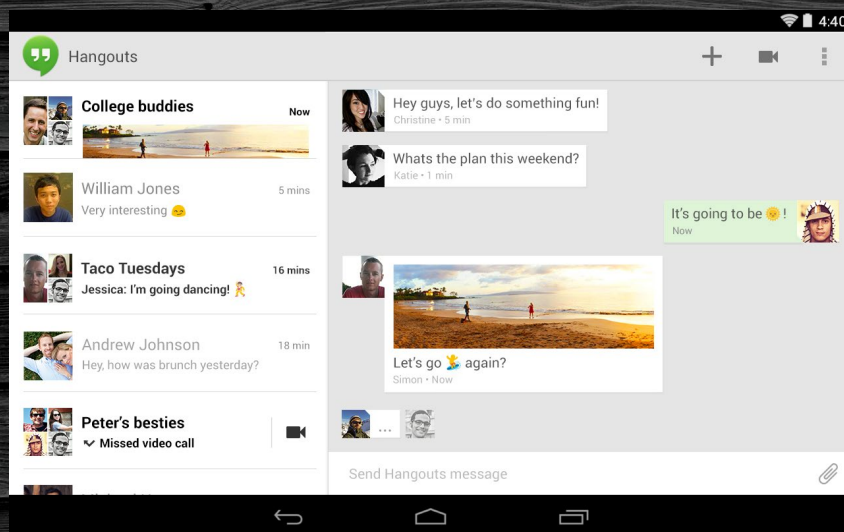
→ Zamzar or FreeFile Convert

Need a file automatically converted to another type of file? You don't need desktop software if you have a browser. Zamzar (pictured; www.zamzar.com) and Free File Converter (www.freefileconvert.com) can each convert files into different file types, and each supports a wide range of formats.

Zamzar supports 1200-plus file formats, but you can only convert files up to 100MB. For larger files, you need a subscription.

Free File Converter's site has more ads, but you can convert files up to 300MB in size, and unlike Zamzar, it doesn't require you to register an email address to download your converted files.

Both let you save files from URLs in the format of your choice.

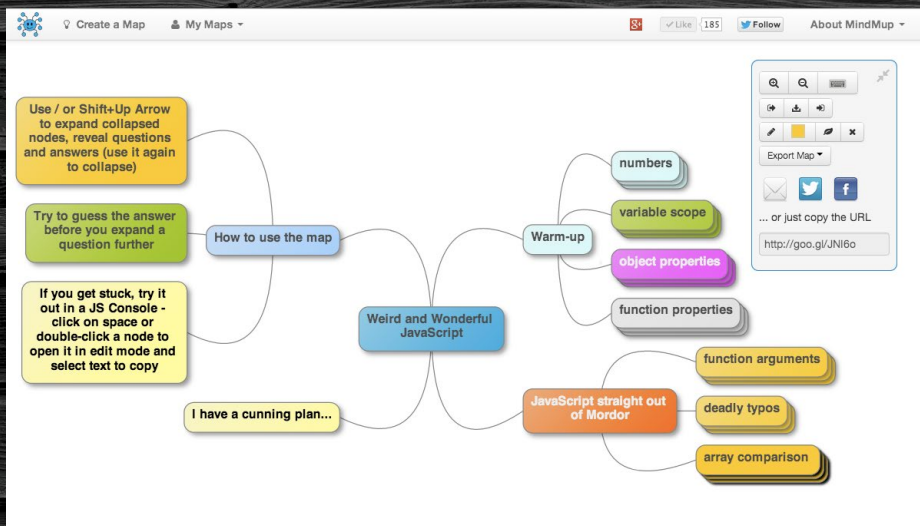


Google Hangouts

Google Hangouts (go.pcworld.com/googlehangouts) may be best known as the proprietary IM service built into Google+ and various other Google properties. But beyond mere messaging, Hangouts shines when it comes to Web-based video chats.

Hangouts supports live video chats of up to ten people, complete with screen sharing and silly sticker overlays, and if you don't feel like combing your hair, you can instant-message or call your contacts. Sounds a lot like Skype, huh?

Even better, Google Hangouts is absolutely free, and the magic is all handled in your browser. Ditching Skype and its desktop software might be difficult if you have a deep contact list inside that service already, but if you don't, Hangouts is a worthy alternative.

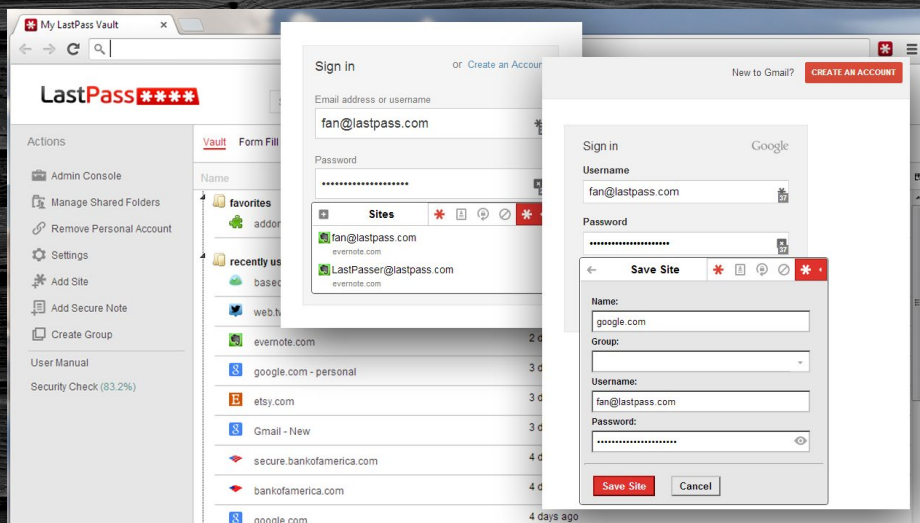


MindMup

Mind-mapping and flow-chart software is pretty niche, but when you need it, you need it. MindMup's website (www.mindmup.com)

delivers mind-mapping tools that are simple enough that newcomers can dive in easily, but still deep enough to satisfy power users.

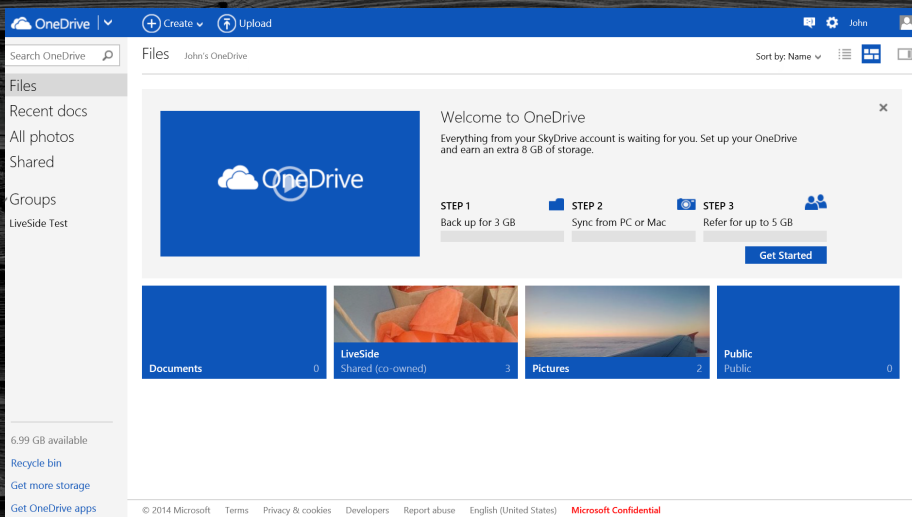
The vast majority of the site's tools are free, but some features—such as the ability to export particularly large maps or embed your MindMup map in a website—require a \$3 per month MindMup Gold subscription.



→ Last Pass

If the recent flood of hack attacks (go.pcworld.com/hackattacks) have taught us anything, it's that, yes, you need to have strong passwords, and yes, you need a different password for each site you visit to minimize the potential fallout if a site you visit is breached. That's where password managers come in. They manage your various logins and can even create strong, randomized passwords for the sites you frequent.

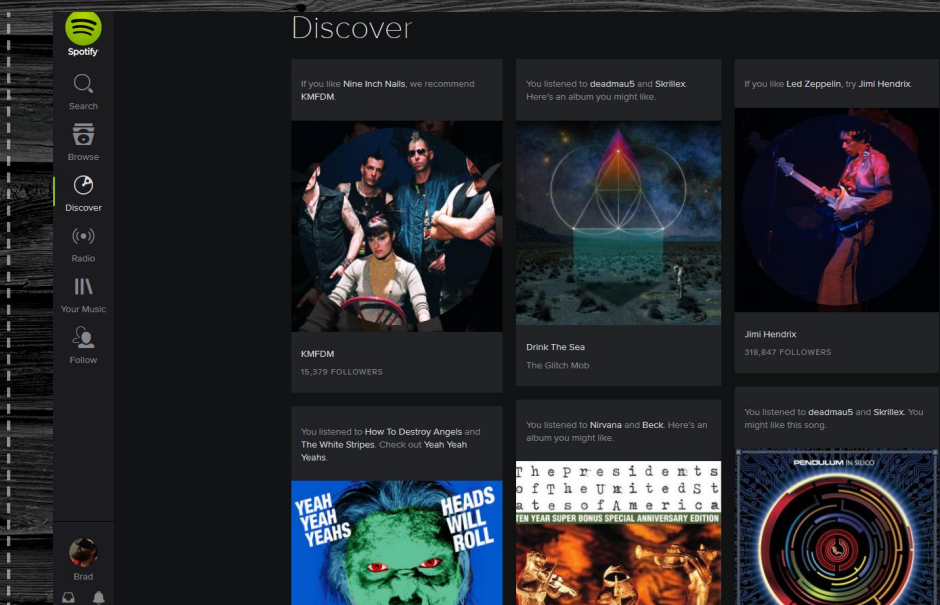
LastPass (lastpass.com) stands out because it's Web-based—unlike KeePass (go.pcworld.com/keepassrev)—and built around browser extensions. Your passwords are stored in the cloud, encrypted by a master password only you know. When a password is needed, LastPass springs into action (go.pcworld.com/lastpassrev). It's dead simple and supereffective. Just be aware that you need a \$12-per-year LastPass premium subscription to use its mobile apps.



→ The cloud storage provider of your choice

But forget software; let's replace some hardware. Cloud storage is cheap these days, with Google Drive (go.pcworld.com/googledrive) and Microsoft's OneDrive (go.pcworld.com/msonedrive) doling out 100GB of data for \$2 per month. A terabyte of Google Drive space will set you back a mere \$10 per month. That's crazy-cheap, and your cloud-stored goodies are available anywhere a Web browser is handy. (Top services also offer desktop software and mobile apps too, of course.)

If you're looking for an abundance of server-stored data for even less, check out PCWorld's guide to supersizing your free cloud storage (go.pcworld.com/morestorage) to 100GB or more. Just be sure you back up your data locally (go.pcworld.com/backupper), in case there's a hiccup in the data center.



→ Spotify Web player

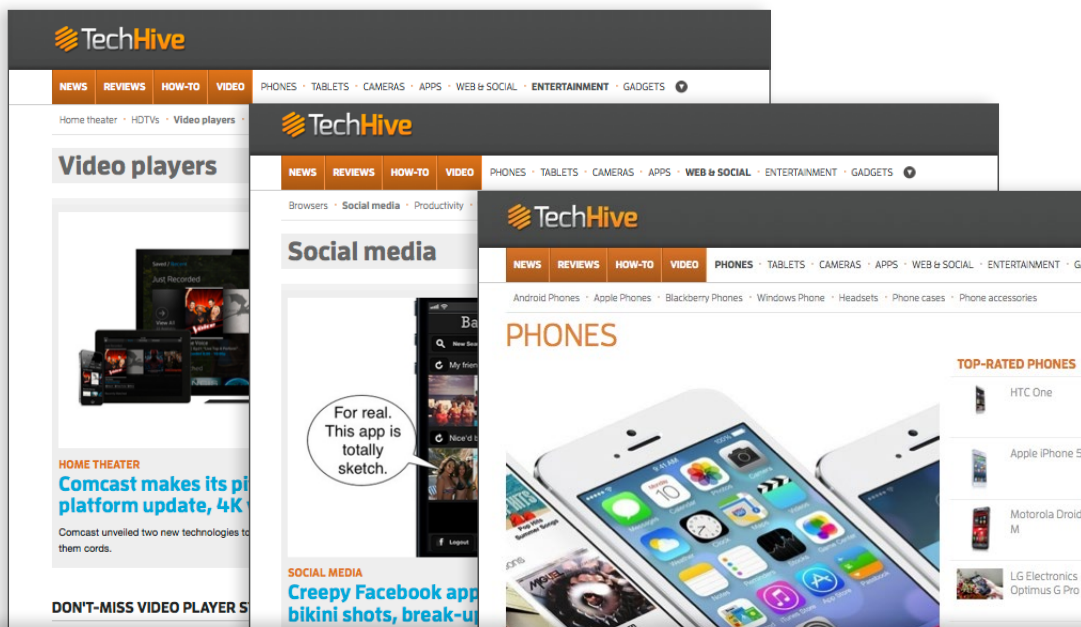
From Windows Media Player to iTunes to VLC, media players are some of the ugliest, least-intuitive pieces of software around.

Enter the Spotify Web client (play.spotify.com). This streaming-music service grants full access to over 20 million songs, free of charge, if you're willing to listen to ads. Or spend \$10 a month to dump the ads, and unlock higher audio quality and offline listening. Spotify's Discover, Browse, and Radio features do great jobs of surfacing new music, as well.

If you already have a collection of music, Google Play Music (go.pcworld.com/googleplaymusic) lets you upload up to 20,000 songs for free and streams them to your browser or mobile device. 



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10 GREAT RAINMETER SKINS FOR PRODUCTIVITY

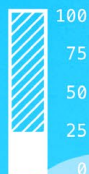


INBOX



68°F

USE RAINMETER TO
CUSTOMIZE YOUR
WINDOWS DESKTOP
WITH TIMESAVING,
PRACTICAL TOOLS.



▲ S&P 500	29.55	(0.44)
▲ DOW JONES	-1.73	(-0.9)
▲ FTSE 100	11.20	(1.25)

TO-DO



BY IAN PAUL



5:19 PM



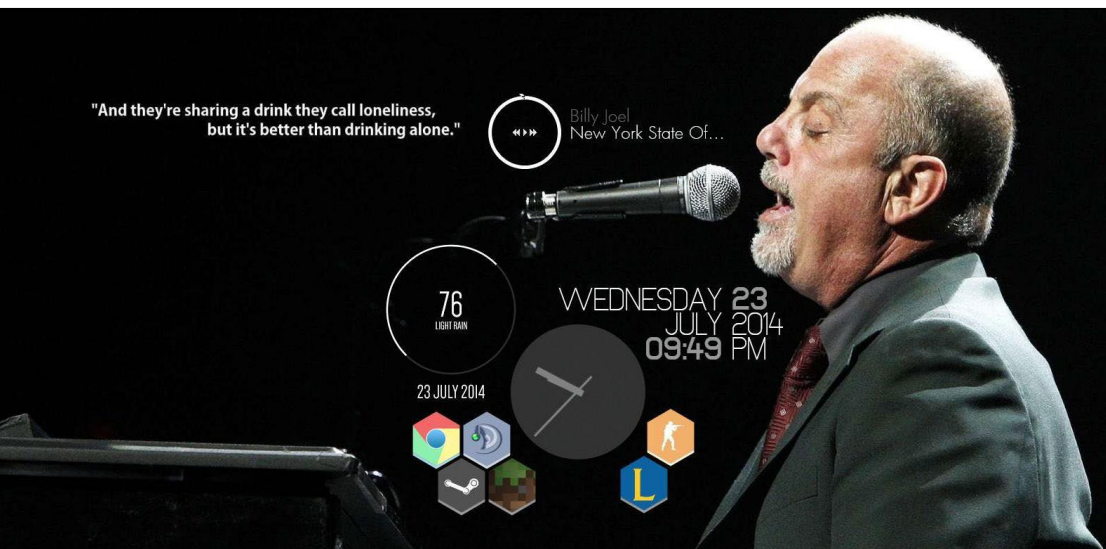
5:19 PM



he free, open-source Rainmeter (rainmeter.net) desktop customization tool doesn't just allow you to create the coolest-looking desktop by mixing and matching skins. Rainmeter can also boost your productivity with widgets that help you keep tabs on your inbox, track the weather, monitor your PC's health, follow the news, and take notes.

Thanks to a recent Rainmeter update (go.pcworld.com/rainmeter31), these skins are also getting smarter, as they can react to conditions such as the PC's temperature or an upcoming appointment.

If you are not familiar with this popular desktop-tweaking tool, check out our tutorial on supercharging your desktop with Rainmeter widgets (go.pcworld.com/usingrain) Once you have the basics down, the following gallery of Rainmeter delights might just inspire you to embark on your own desktop-design adventure.



HONEYCOMB

A SIMPLE APP LAUNCHER

This Billy Joel-themed desktop by Reddit user I-Draw-Sometimes (go.pcworld.com/joelrain) uses the Honeycomb Rainmeter skin (go.pcworld.com/rmhoneycomb) to put favorite apps front and center. In this case, the apps are mostly games and Chrome, but you can swap in anything you want. Honeycomb requires a little more setup than other

skins do, and you need to know your way around the Windows file system. A short YouTube tutorial (go.pcworld.com/ythoneycomb) will help you get started.

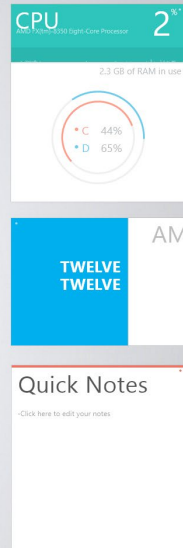
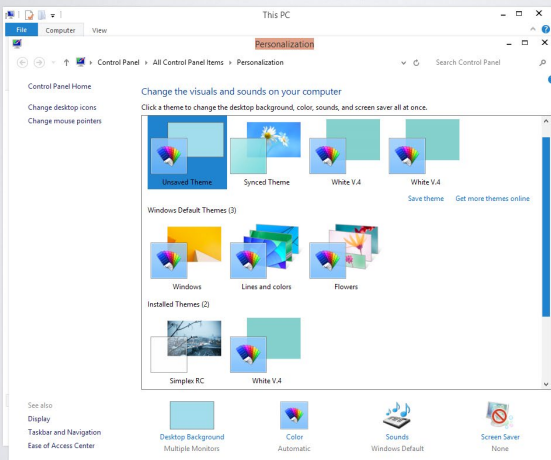
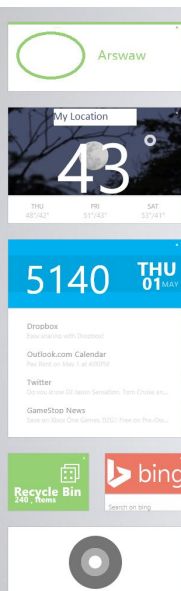
In addition to Honeycomb, this desktop uses Muziko for the music player, Detox for weather reports, Smooth Clock for the analog time, and the Simple Media skin for the text-based date and time.

JULY FLAT'ISH

VERY FLAT, VERY PRACTICAL

The flat, nonglossy look is in vogue for PCs and smartphones, which makes the July Flat'ish (go.pcworld.com/flatish) skin a nice complement to Windows 8.1. This skin can keep you productive with its

notebook, weather widget, Bing search, CPU monitor, and inbox widget. Reddit user Arswaw (go.pcworld.com/flatwhite) shows just how nice July Flat'ish can look with this clean desktop that uses a white theme in Windows 8.1.





LIM!T

TEXT WITH A TWIST

I mages and icons are great, but some people prefer text-based interfaces even in their Rainmeter widgets. If that's you, check out Lim!t (go.pcworld.com/rmlimit), a text-centric Rainmeter skin with a twist. Lim!t can display a PC's CPU usage and temperature, along with the date, time,

and weather—but as the value of each element increases, so does the text size. Thus, the more CPU resources you're using, the bigger that indicator gets, and as the morning or evening progresses, the bigger the time becomes. This skin is a great choice for getting basic information at a glance.

WEBCAMZ

SECURITY CENTRAL

W

e didn't test this interesting skin featured on Customize.org, but if it functions as advertised, it can help anyone in charge of security keep an eye on their working environment from their

PC. Webcamz (go.pcworld.com/webcamz) turns your entire desktop into a grid of live security cameras. Put this skin on a dual-monitor setup, and you can watch for intruders even while you browse the Web.



MARKET PRICES

FOLLOW THE MONEY

As its name suggests, this skin is for stockbrokers and investors. Hooked into Yahoo Finance, Market Prices (go.pcworld.com/rmmarket) lets you monitor financial markets with two variants, tracking either five or eight stocks and

indexes. The skin also allows you to sort stocks by the percentage change in price.

An alternative version (go.pcworld.com/rmmarketalt) uses data from Bloomberg.com. That version, however, does not allow for sorting stocks by price.





START MENU

FOR RAINMETER: BRING BACK AN OLD FAVORITE

Microsoft is restoring the Windows Start menu after dumping it in Windows 8. But the revised Start menu likely won't arrive until 2015. Until then, Rainmeter users can try Start Menu for Rainmeter (go.pcworld.com/rmstart), a

derivative of an earlier project called Multi Start Menu.

This skin creates a modern-style Start menu for launching apps. It also has a screenshot tool, and offers quick access to your folders, Task Manager, Regedit, the command prompt, and the Run window.



WRMZ

PLAYFUL BUT PRODUCTIVE

With its whimsical cartoon characters, WRMZ (go.pcworld.com/rmwrmz) is kind of like the Comic Sans of Rainmeter skins. But don't be fooled: Beneath its silly veneer, WRMZ has some excellent productivity tools, including an email-inbox widget, a to-do list,

a CPU monitor, a clock, and utilities for keeping tabs on your disk space and Internet speed.

This desktop, which was created by DeviantArt user bowchikabow (go.pcworld.com/wrmzcustom), uses both WRMZ and Placebo for Windows 7 (go.pcworld.com/placebo).

VCLLOUDS RSS

PERFECT FOR NEWS JUNKIES

Anyone wanting nothing but news should check out the VClouds RSS (go.pcworld.com/rmvclouds) Rainmeter skin, which provides for up to four RSS feeds. This 2012 desktop by Customize.org user godanielcroz (go.pcworld.com/vcloudscustom)

combines VClouds RSS with Lexis for the calendar and the weather report, iTunes Monitor (Enigma), and 10-Foot HUD for the date and time. Lexis is no longer available, but you can find many skins that give the calendar and the weather report a similar look.

The screenshot displays a desktop skin with a dark, textured background. At the top left, a system status panel shows 'AC Line: 100%', 'Signal: 0', 'Cpu: 25%', and 'Up: 8 H'. Below this is a 'Now Playing' section for 'Marry you' by Bruno Mars. The main area features three news feeds: 'Arsenal' (Premier League: Swansea 3-2 Arsenal), 'Kompas' (Jatim Soekarno-Hatta Lampung Rusak), and a third feed with headlines about a bus accident and a police officer. On the right, a large digital clock shows '4:09' and '16 JANUARY MONDAY'. Below the clock is a calendar for January 15-21, with the 16th highlighted. A weather widget for Shanghai shows a moon icon, '5°', and 'RealFeel 3°'. At the bottom, a navigation bar contains the text 'CONNECT YAHOO! GB INT FLIGHT GTA SA SETTING'.

AC Line: 100%
Signal: 0
Cpu: 25%
Up: 8 H

CPU RAM DISK

Now Playing
Marry you
Bruno Mars
Doo-Wops & Hooligans

Arsenal
Premier League: Swansea 3-2 Arsenal - Report
Swansea v Arsenal: Choose your Mom
What did you think of the Swansea game?
Player: Swansea v Arsenal - Highlights
TEAM NEWS: Benayoun in for Swansea trip
Wenger - I don't like the January window
Wenger - Chamakh won't be sold in January
Wenger - Arshavin still an efficient player
Wenger - We are not after Solomon Kalou
Bacary's Junior Gunners blog

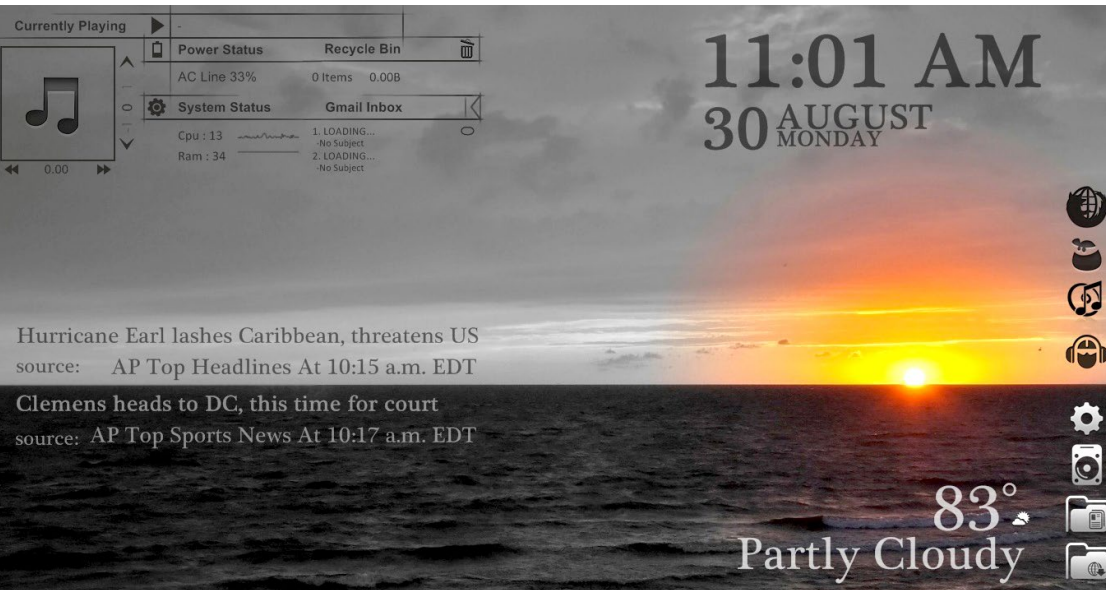
Kompas
Jatim Soekarno-Hatta Lampung Rusak
Unik Reza Sambat Kunjangan Paus
Aksi 2009 Siapan Bangkal Slapp 24 Jan
Man Barmuloh di Luar Angkasa
Bodoya Musyawarah Mafakat Makin Luntur
Polisi Dituntut Ganti
Vatol Hams Berhenti di Red Bull
Crouch Cukur di Bekas Lokasi Kerusthan
Razia Pansel di Cirebon, Setengah Hati
LSE-BEI Kembangkan Produk Syariah

4:09
16 JANUARY
MONDAY

Su 15 16 17 18 19 20 21
Shanghai, China
Currently at 3:30 AM

5° RealFeel 3°

CONNECT YAHOO! GB INT FLIGHT GTA SA SETTING



MULTIPLE THEMES

MAXIMIZING INFORMATION AND SPACE

In this desktop, Customize.org user Darkhoarse (go.pcworld.com/rmmultiple) shows how mixing and matching themes brings out the power and beauty of Rainmeter. This desktop simultaneously displays a ton of information—such as weather and news, a music player, a Gmail inbox, the

Recycle Bin, and system status info—yet the desktop isn't crowded or messy.

At play here is the defunct Fade skin for the system information, plus MyHUDs for the time, date, weather, and news. Darkhoarse made this desktop in 2010, but most of the components are still available and many alternatives for the Fade skin exist.

GREEN BUBBLE

FOR WORK AND PLAY

Lifehacker, which has had an ongoing love affair with desktop tweaks, recently featured this desktop by reader Matt Pollard (go.pcworld.com/rmgreen). It has a neat-looking rotating calendar, as well as widgets for RSS feeds, notes, and social updates.

The centerpiece of this desktop is the very useful Eker_lina (go.pcworld.com/rmekerlina) Rainmeter suite, which includes lots of productive widgets. Pollard also used RocketDock (rocketdock.com), an OS X-like application launcher for Windows, along with some Rocketdock icons available on DeviantArt.





**“ SURE,
AT FIRST I WAS A LITTLE TAKEN ABACK
BY THE WHOLE PEEING STANDING UP THING.
BUT I TAUGHT HIM TO THROW A STICK
AND NOW HANGING OUT WITH HIM
IS THE BEST PART OF MY DAY.”**

**—EINSTEIN
adopted 12-09-10**

**A PERSON
IS THE BEST
THING TO HAPPEN
TO A SHELTER PET**



adopt

theshelterpetproject.org



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HERE'S HOW

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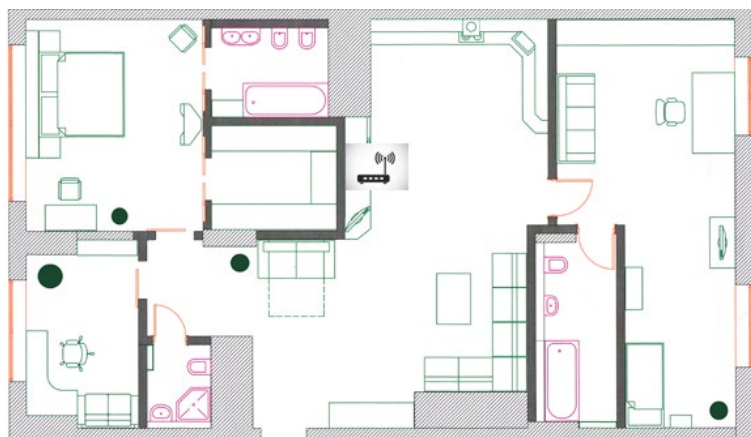
Blanket your home or small office with Wi-Fi

BY MARK HACHMAN

WIRELESS NETWORKS HAVE gone from being nice to have to being indispensable. And it's not just computers that have come to rely on Wi-Fi.

You can save money on your mobile data plan by connecting your smartphone to it. Your tablet needs it. Your smart TV demands it. Even your home-automation system requires your wireless network to connect to the Internet.

When your computer was locked down in one spot, it wasn't a big deal if your Wi-Fi router couldn't reach every corner of your home.



Place your wireless access point as close to the center of your house as possible.

But you can't move your TV into the den just to get reception. And you shouldn't have to limit where you can wander inside—or even outside—your house with your laptop, smartphone, or tablet and still be able to reach the Internet.

Those Wi-Fi deadspots have got to go. Luckily for you, we have ten great tips for blanketing your entire home with Wi-Fi.

Choose the best location

As with real estate, the three most important principles of wireless network deployment are location, location, location. I'm talking about the location of your wireless access point (AP), of course.

In most cases, your wireless AP and your router are the same piece of equipment. To get the best results, set up your wireless AP in a location that's as close to the center of your home as it can be. Placing the wireless AP on an unenclosed shelf instead of putting it on the floor will also extend its range. This is especially important if you live in a multifloor dwelling.

The fewer walls, floors, and other obstacles between it and your client devices the better, so try to avoid putting your wireless AP in the basement. Obstructions such as masonry walls, large appliances



(your refrigerator), and metal file cabinets will all impinge on your wireless AP's range.

Use the least-crowded Wi-Fi channels

Perform a site survey to determine which Wi-Fi channels are being used in your locale. There are a number of free programs for this task, including NetSurveyor (go.pcworld.com/netsurveyor) and WiFi Channel Scanner for Windows (go.pcworld.com/wifiscan), or Network Signal Info for your Android smartphone or tablet (go.pcworld.com/signalinfo).

It's hardly rocket science: Pick the least-crowded channel to get the highest Wi-Fi performance and range. It's a good idea to resurvey your environment every month or two to ensure that the channel you're using is still the least-crowded channel. Don't assume that the networks around you will remain static.

In the United States, there are 11 channels available for Wi-Fi networking on the 2.4GHz frequency band, but only three of those—channels 1, 6, and 11—don't overlap.

There are many more nonoverlapping channels available on the 5GHz frequency band, which also tends to be less crowded. If all your relevant equipment supports it, this is the best band to use for media streaming.

Update your Wi-Fi router's firmware

Your router's manufacturer will periodically release new firmware versions that can improve the router's security and make it run faster.

The adapter
(the client side of your network connection) sometimes needs a firmware update.

Establish a monthly routine of visiting your router manufacturer's website to check for new firmware releases. Some routers have a tool built into the router's user interface that makes this task even easier.

Be sure to follow the manufacturer's instructions for updating the router's firmware.

Update your Wi-Fi adapter's firmware

There are two sides to your network connection: The host (the wireless access point) and the client (an adapter inside your PC or a device you plug into its USB port).

Companies that build Wi-Fi adapters will sometimes release driver and firmware updates just like router manufacturers do.

So whenever you check for new router firmware, do the same for your client adapter.

You can repurpose an old router into an access point.

Consider alternative firmware

Some routers support alternative firmware—that is, firmware developed by an entity other than the manufacturer you purchased the router from.

Alternative firmware—with DD-WRT (go.pcworld.com/ddwrt2) being the most well-known example—might deliver higher performance and/or expose features in the hardware that the manufacturer's stock firmware does not.

If you go down this road, be aware that you most likely will no longer get tech support from the manufacturer because you have fundamentally changed the product.

In most cases, however, you should be able to reinstall the factory firmware if you run into an issue you can't solve on your own.



Reconfigure a cast-off router as a wireless access point or repeater

Nearly any old router can be reconfigured to function as a wireless AP. Check the user manual or log in to the router firmware to find out how to do it for the specific device you're planning to use.

The best strategy is to run an ethernet cable from your primary router to the location where you want to set up the new wireless access point.

Another solution would be to use a pair of powerline nodes: one connected to your router and a second near where you want to set up your wireless access point.

A third alternative would be to reconfigure the old Wi-Fi router to operate as a wireless repeater. Here again, check the hardware's user manual to see if the device supports this type of operating mode and how to enable it.

A USB cradle
lets you place
your adapter
in a more
effective spot.

Plug your USB Wi-Fi adapter into a cradle

Some USB Wi-Fi adapters come with cradles that enable you to change the adapter's placement and/or orientation. These can be particularly useful with desktop PCs where the adapter might be blocked by your monitor or shoved against the wall.

USB cradles are very inexpensive, if your adapter didn't come with one. You should be able to find one for less than six bucks. An even cheaper alternative would be to purchase a semi-rigid USB cable. (Be sure to buy one with a male USB connector at one end and a female USB connector at the other.)

Either device will allow you to position your Wi-Fi USB adapter



higher and farther away from objects that might block your wireless AP's signal path.

Upgrade your Wi-Fi router's antennas

There are only so many strategies you can try before you need to spend some money. If your router has upgradable antennas—such as the Asus RT series or the new Linksys WRT1900AC—you could try swapping out its antennas for models that provide higher gain.

This strategy obviously won't work if you own a router or wireless access point that uses internal antennas—unless you're handy with a soldering gun.

You might want to consider deploying a wireless range extender.

Deploy a Wi-Fi range extender

Before you decide to replace your wireless router, you might want to consider deploying a wireless range extender. It's a cheaper and easier solution, although there are downsides to be aware of.

A wireless range extender picks up the signal from your wireless AP and rebroadcasts it to improve your network's coverage. It works best when equidistant from the primary wireless access point and the client(s) you're trying to reach.

Here's the downside: If the extender has just one radio for each frequency band, its throughput will be halved because that radio must receive data from the wireless access point and then retransmit it.

You can use any type of range extender with any type of wireless access point. You don't need to have an 802.11ac access point to deploy an 802.11ac range extender, for instance.

Upgrade your router or wireless access point

This tip comes last because it's the most complicated—and the most expensive—method of extending your network's range: Buy a new wireless router or access point.

Replacing the heart of your network can be a pain in the neck,

because you'll need to change the login information that all of your wireless clients are using, among other things.

But if you're still trying to get by with a four- or five-year-old 2.4GHz 802.11n router, you should definitely consider moving up to 802.11ac hardware. This class of equipment delivers terrific throughput and range.

I reviewed (go.pcworld.com/bestrouters) a number of these devices in December 2013, but the Linksys WRT1900AC (go.pcworld.com/linksyswrt) that hit the market in March 2014 is the absolute fastest router you can buy. 

How to find anything in Evernote: 6 advanced search tips

BY ALEX CASTLE

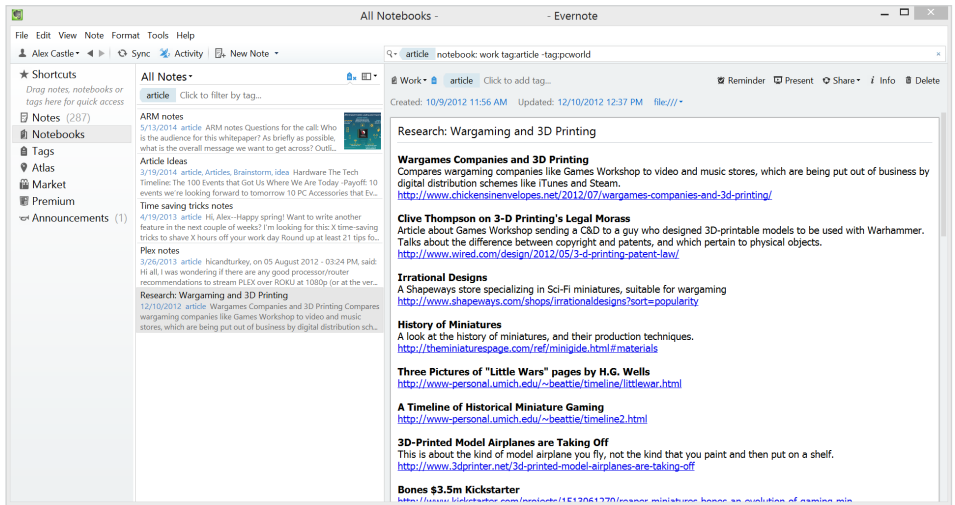


WHEN IT COMES to taking notes, you can't beat Evernote. With its mobile apps and browser plug-ins, it's incredibly easy to take any article, image, or other data and add it to your personal collection. It's so easy, in fact, that it often takes less time to add a note than to decide whether you really need it. Before you know it, you've got way more info than you know what to do with.

So what are you supposed to do when it comes time to find one of your notes? Manually browsing through them is akin to rifling through a file drawer. Instead, home in on what you're looking for using Evernote's advanced search operators. These modifiers let you find notes based on where or when they were created, which notebook they're filed in, or even what type of media they contain. Here are the most useful operators for narrowing your searches.

1. **Keyword searches**

1. You can get a lot more from a keyword search if you know when



to use the **any:** operator. By default, Evernote shows only the notes that include all the keywords in your search. If you'd like to expand your search, put the **any:** operator before your keywords, and Evernote will show you every note that contains even a single one. For example, the following search will show you all notes with the word "invoice" or "expense."

any:invoice expense

2 Tags and Notebooks

You can search a specific notebook by including the **notebook:** operator at the beginning of your search. For instance, the following search will look only for meeting notes from your "Office and work" notebook. If a term includes a space, you can surround it with quotation marks to make Evernote understand it as a single keyword:

notebook:"Office and work" meeting

If you know a keyword is included as a tag in the note you're seeking and you don't want to see notes that include that keyword as body text, use the **tag:** operator. Both the **notebook:**

Notebook and tag searches can really help you sort the wheat from the chaff in your pile of notes.

and **tag**: operators can be negated by putting a hyphen (-) in front of them. The following search will find notes including “article,” but that don’t have the “draft” tag:

-tag:draft article

3. Time frame

You can search for notes created or updated during a certain time period using the **created:** and **updated:** operators. Both of these must be followed immediately by a date in the YYYYMMDD format. They will show all notes created *after* the specified time, and they can be negated to show notes created *before* a certain date. Combine both to specify a certain date range, as in the following example search for a Fourth of July itinerary:

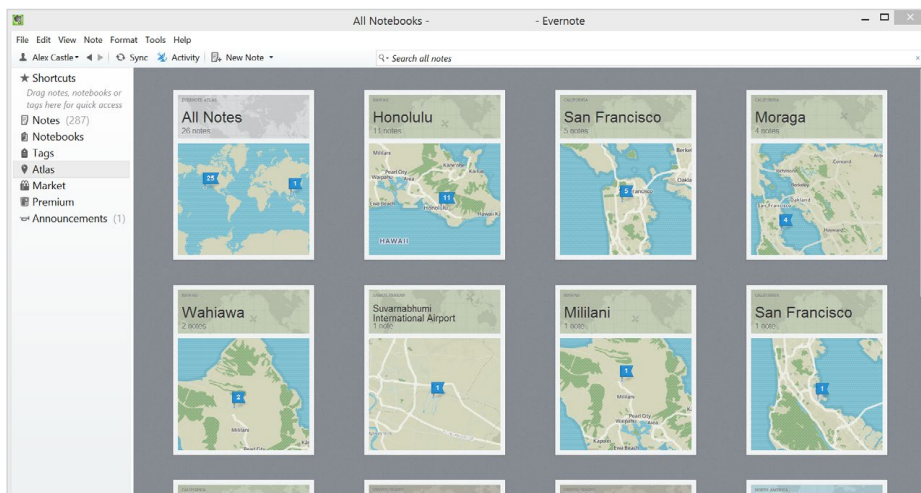
created:20140703 –created:20140705 itinerary

4. Location

If you create notes with a location-aware smartphone or laptop, your notes might be saved with latitude and longitude data. You can search for them using the **latitude:** and **longitude:**

Evernote's

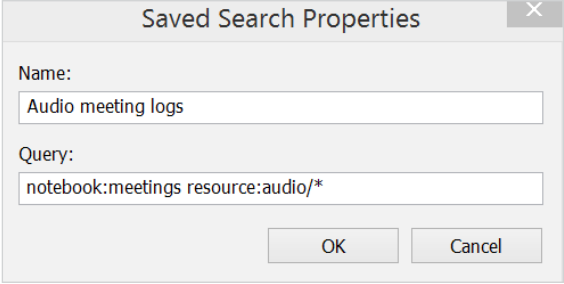
Atlas can arrange notes by where they were taken.



operators. For instance: If you live in San Francisco but recently attended a conference in Los Angeles (latitude 34), you could find notes taken there with the following search, which will return all notes taken between latitudes 33 and 35:

latitude:33 -latitude:35 conference

If you're unsure of a latitude and longitude, you can find it in the browser version of Google maps. Simply enter the address you're looking for, and then clear the search bar by clicking the X. The latitude and longitude of the address will be shown in the address bar.



Saving
searches in
Evernote can
save you a ton
of time and
typing.

5. Media type

Finally, you can search for notes containing a certain type of attachment using the **resource:** operator, followed by a type of media, then a forward slash and a file type or an asterisk to indicate that any file of that general type is valid. For instance, the following search string, which also uses the **any:** operator, will find notes that include any of the following: a PNG image, a PDF file, or any audio file:

any: resource:image/png resource:application/pdf resource:audio/*

6. Saving searches

With these operators, you can make very specific custom searches. If you see yourself using the same search in the future, you can save it by clicking in the search bar, clicking the *Save Search* button, then giving your search a name and hitting *OK*.

To see your saved search, just clear the search bar and click on it. A list of recent and saved searches will appear. You can drag your saved search over to the bookmarks panel to make it even easier to find later. 



Swap files fast between Windows and Android with Pushbullet

THERE ARE MANY ways to get files from your PC to a mobile Android device. One of our favorite methods around here is the super-useful AirDroid for Android (go.pcworld.com/airdroid). But a recent feature from the free app Pushbullet (go.pcworld.com/pushbullet) for Android and iOS recently caught our attention.

Pushbullet makes it ridiculously simple to transfer files from one device to another with just a few clicks. The connection between your devices is always present, meaning you don't have to reconnect every time you want to swap a picture.

I wouldn't call Pushbullet a replacement or even a competitor to AirDroid though, because the two apps don't work the same way.

Pushbullet doesn't give you complete access to your phone's file system like AirDroid does. Instead, it allows you to transfer files, links, notes, and messages from one device to another.

If you're in front of your phone, you could, for example, send a picture to your PC. Once you're at your PC, you could send a recently downloaded song back to your phone.

So if you're already an AirDroid user, why should you use Pushbullet?

For Android users, it puts all your phone's notifications on your desktop thanks to the way the mobile app works in concert with a desktop companion on your PC. You can see



incoming phone calls, texts, alerts from your favorite news apps, email notifications, and so on. You can also disable notifications via Pushbullet on a per app basis.

Pushing files with pushbullet

For this to work, you need to have Pushbullet on your phone (Google Play, iTunes) and the companion desktop app (go.pcworld.com/pbapp) running on your Windows machine. Once that's done, sign in to both apps with your Google account, and your devices will be able to swap files via Pushbullet.

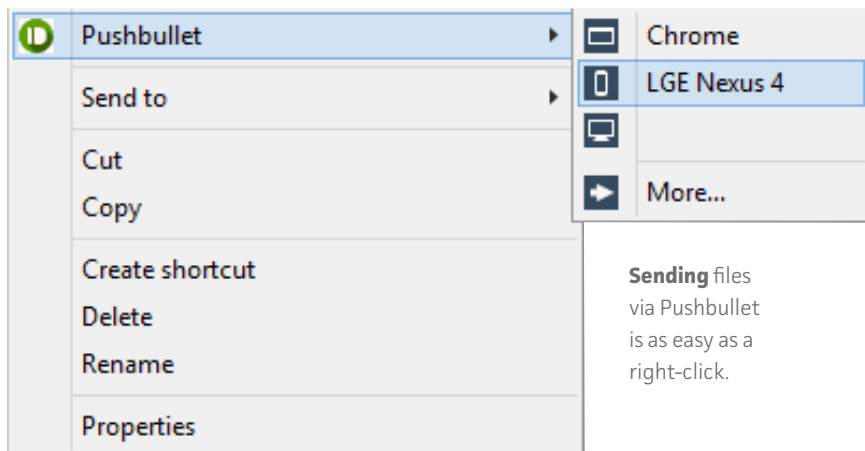
Let's say you want to move a music file to your phone, and the file is stored at: C:\Users\Me\Music\GroovyTune.mp3 to your phone.

First, open a File Explorer window and navigate to that location. Then, simply right-click the file, and in the context menu you should see a heading that says "Pushbullet."

Hover your cursor over the heading until a second menu opens up with the names of your devices. Choose your phone—in my case it's the LGE Nexus 4—and click.

A desktop notification will pop up to let you know you that the tune is uploading.

That's it—easy peasy.



Sending files via Pushbullet is as easy as a right-click.

Limitations

Although Pushbullet is easy to use, the app does have its limitations. For starters, you are restricted to pushing files of 25MB or less to your phone.

You also can't move multiple files at once. The only way to get a big batch of files onto your phone at one time is to create a zipped file of 25MB or less.

Any files sent to your phone via Pushbullet are placed in the Downloads folder on Android. However, Pushbullet also keeps a record of files swapped between devices, allowing you to access files and notes inside the app.

Pushbullet isn't perfect for every occasion where you want your phone talking to your PC. But if you're looking for an app that lets you swap files between devices without manually creating a new connection every time, give Pushbullet a try. 

Pushbullet also keeps a record of files swapped between devices.



When your computer won't turn on

Q: I RECEIVED this very terse message from a reader:
“Computer does not come on.”

—Lou C.

A: A lot of problems can keep a computer from booting Windows (or any other operating system). Fortunately, you can get a pretty good idea of what kind of problem you're dealing with by noting how and when the PC fails. If you press the power button and nothing happens, you've got a very different problem than if the PC starts but Windows never loads.

Let's take a look at some of the possibilities.

If nothing happens when you press the power button, you almost certainly have a power problem. The electricity is not getting to the PC.

Unplug the power cord. Examine it for breaks or other damage. If you find damage, you know what to replace. Otherwise, plug everything back in, make sure all of the plugs are firmly in their sockets, and try again. (If the power cord is a laptop AC adaptor, check the connections between the different pieces.)

If it still doesn't work, plug something else—like a lamp—into the same socket. That will tell you if there's a problem with the surge protector or the electric outlet. If your surge protector or power strip is under your desk, check to make sure a wandering toe didn't turn it off.

I recommend paying a professional to replace the power supply on a laptop.

If the cord appears to be fine and the socket works, try replacing the power cord or, in a laptop, the AC adapter. You may have to buy one specific to your model.

The problem could be with the power supply. If nothing else fixes the problem, consider replacing that. Desktop power supplies are usually cheap and easy to replace yourself.

That's not the case with laptops. Unless you're a very skilled technician, I recommend paying a professional to replace the power supply on a laptop.

If the PC starts, but fails before Windows can load, go into your PC's setup program, make sure that the hard drive is recognized and in the boot sequence. I went into details about this task recently (go.pcworld.com/boothelp).

You might also consider booting with a live Linux disc or a flash drive to see if you can access the contents of the drive (go.pcworld.com/linuxhelp).

Send your questions to answer@pcworld.com. 

Tech Spotlight

A video showcase of
the latest trends



Watch the
video at
[go.pcworld.
com/
swatchvid.](http://go.pcworld.com/swatchvid)

A stylized illustration of a smartwatch with a black face and a grey band. The watch face displays the text 'Wearables RIGHT OR WRONG?' in white and orange. The word 'Wearables' is in white, 'RIGHT' is in orange, 'OR' is in white inside a black circle, and 'WRONG?' is in orange.

Wearables
RIGHT OR
WRONG?

Wearables Right or Wrong? Smartwatches

» In Episode 8 of his weekly video show (shot before Apple released the Apple Watch), Editor-in-Chief Jon Phillips examines the relevance of Apple hiring

a sales and marketing exec from TAG Heuer, a luxury Swiss watch brand; the likelihood of the smartwatch and traditional watch markets merging; and his frustrating experiences with the navigation feature in Android Wear.