A close-up photograph of a child's face, with their hands covering their eyes. The child's mouth is slightly open, showing their teeth. The background is dark, and the lighting is soft, highlighting the child's skin and the texture of their hands.

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The True Truth About Net Neutrality

February 27, 2015

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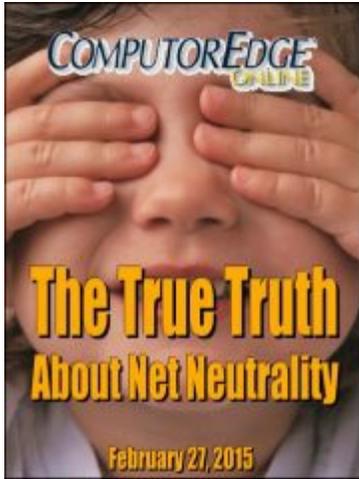
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The True Truth about Net Neutrality

What is Net Neutrality and how does it really affect your Internet service?

Magazine Summary

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[Digital Dave](#)

by Digital Dave

Digital Dave answers your tech questions.
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[Net Neutrality, Who Cares?](#)

by Jack Dunning

How Do We Keep the Internet Free and Open?
Despite the claims by both sides of the Net Neutrality debate, the situation isn't all that bad, nor is it likely to change much after the latest FCC ruling.

[Don't Overlook the ErrorLevel Variable When Writing AutoHotkey Scripts](#)

by Jack Dunning

Make Your AutoHotkey Scripts More Robust by Using ErrorLevel
By implementing ErrorLevel traps in our AutoHotkey scripts, we can stop apps from hanging while telling the user what they did wrong.

[Wally Wang's Apple Farm](#)

by Wally Wang

The Price of Cheapness

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by Charles Carr, News and Reviews Editor

The latest in tech news and hot product reviews.

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by ComputerEdge Staff

Computer and Internet tips, plus comments on the articles and columns.

"AutoHotkey Calorie Counter Script," "Too Much Detail?" "Not Enough Detail," "House Wiring Adapters"

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Digital Dave

“Digital Dave answers your tech questions.” by *Digital Dave*

Memory Problem; Windows 7 in XP Mode and Antivirus.

Memory Problem

Dear Digital Dave,

I have a HP Pavilion P6000 Model P6750. It came with 4GB of RAM. I added 4 more GBs and it worked fine for three months, then died. The HP beeps and says memory problem. I replaced the memory with four new GBs RAM, but it still beeps the same. What gives?

I love your articles.

*Roy Hassell
El Cajon, CA*

Dear Roy,

The only thing we know for sure is that it's a memory problem. If you remove the new memory, does it work with only the 4GB RAM? If not then the problem is probably with the original 4GBs.

If so, one of the first things I check is that the memory is properly seated in the memory slot. Sometimes it can be a little tricky, but there is generally a little click just as it gets into place. Otherwise, the jiggling of the computer could cause it to loosen and error.

Next, since you already have the memory, make sure it is all the same type and speed, plus from the same manufacturer. This includes the original memory installed in the machine. At times different brands of memory may be incompatible.

It's possible that the problem is between the original 4GBs of memory and the new memory, not the additional sticks. You should try to install the new memory and remove the original.

Go to the manufacturer's site and make sure that you have all the correct type of memory installed. Worst case there is a hardware problem and you will need assistance from HP.

Hopefully it is still under warranty.

Worst case is faulty motherboard. Maybe voltage or timing settings, but probably not since it worked for a while. It could be just one bad stick, so try them individually if it's not a 4GB stick.

Digital Dave

Windows 7 in XP Mode and Antivirus

Dear Digital Dave,

I have a Windows 7 (64-bit) machine and need to occasionally run in XP mode. I've read that I should install antivirus software within XP mode, which I've done (AVG-free). However, when I try to scan the XP computer, two things happen: first, it scans my entire computer (for which I'm using AVAST-free) and second, it uses 100% of my CPU, and generally locks up. (I tried running AVAST in XP mode, but got same set of problems.) Suggestions? Thanks in advance.

*Larry Foster
San Diego, CA*

Dear Larry,

Antivirus software for Windows XP is not designed for Windows 7. As a rule when you try to scan a hard drive with antivirus software it attempts to do the entire drive. It is quite possible that the antivirus running in Windows 7 is interfering with the scan you're running in XP mode.

The primary purpose of the malware protection in XP mode is to intercept problems while the virtual machine is running, not scanning the hard drive. On a Windows 7 machine, I would only scan while working with Windows 7.

Whether you even need antivirus protection in XP mode is dependent upon what legacy software you're using. If you're running programs or games which don't access the Internet, then there is very little risk. If you are then more then there are likely replacement programs available to run in Windows 7. I would do everything possible to eliminate the need to run XP mode at all. But in any case, I would forget about running an antivirus drive scan while in XP mode.

Digital Dave



Net Neutrality, Who Cares?

“How Do We Keep the Internet Free and Open?” by Jack Dunning

Despite the claims by both sides of the Net Neutrality debate, the situation isn't all that bad, nor is it likely to change much after the latest FCC ruling.

Yesterday the FCC passed a new set of [rules for Net Neutrality](#) reclassifying Internet service as a public utility. Many hail this as a strike for a free and open Internet while others (mostly cable and telecom companies) feel that it opens the door to government regulation and the stifling of innovation.

One of my sons did the best job of explaining Net Neutrality from the perspective of an Internet consumer. "If I pay for 15 Mbps of bandwidth, I should get 15 Mbps of bandwidth without throttling or capping. It's my business how I use it—even if it's a high usage service such as Netflix!" For most users this reflects their attitude, whether the service provider is a cable company, DSL, or other form of Internet access. "Don't sell me 15 Mbps of bandwidth, then, when I use it, tell me I'm using too much!"



"Plus, if I'm already paying for Netflix, why should the cable company (whom I'm already paying for the bandwidth) get to charge Netflix again? That fee is just going to come back to me in the form of higher charges. It seems that the middlemen (mostly cable companies) are acting like trolls (see left) collecting tolls at a bridge—that's already paid for!" This may be the most valid argument about Net Neutrality, but is it what's actually happening?

A quick definition of Net Neutrality is no one should be able to designate who can access the Internet nor determine what Internet service or content is acceptable. Any restrictions imposed whether by bandwidth control, IP blocking or biased rate structures is unacceptable. The Internet is then neutral since no one controls it. The problem comes in when Internet Service Providers (ISPs) decide that they should be able to make those types of determinations and charge more. The ISP is supposed to provide the connection to the end user and get out of the way.

It is acceptable for an ISP to charge more for a faster connection (more bandwidth) and special services such as a fixed IP addresses (usually used for VPN servers or Web servers). What an ISP should not be doing is picking and choosing who can get through to the end user or at what speed. They should not give preferential treatment to their own programming or any other service which offers to pay them more for priority.

Net Neutrality Expert John Oliver

Probably the most widely viewed source for an explanation of Net Neutrality and its ramifications is the [comic HBO video by John Oliver](#). Oliver explains that there are two types of Internet services in this new non-neutral Internet: High-speed for big companies and monopolies and no-speed for the rest of us. He uses this chart (see Figure 1) to show how Netflix was blackmailed into paying Comcast big bucks to deliver its service to Comcast customers. Netflix service improved dramatically after a deal was struck between the two.

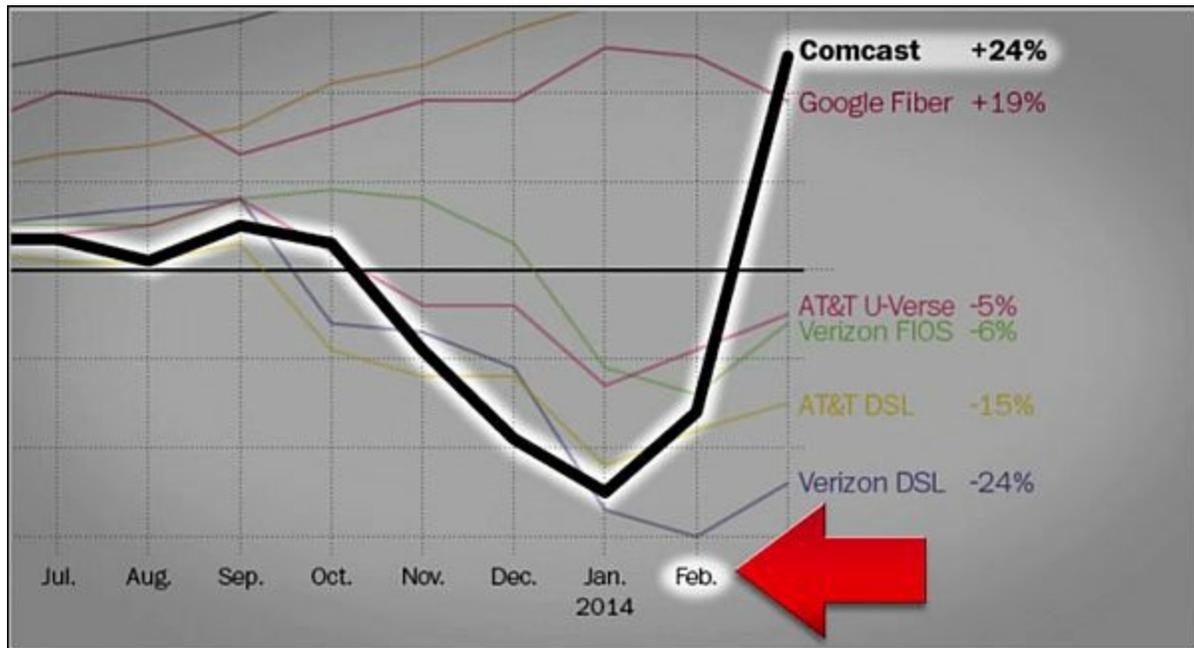


Figure 1. Comcast must have been throttling Netflix service. Look what happened when Netflix finally paid "protection" money in February 2014. But is it that simple?

As a Netflix user, I don't really care if they make a pact with Comcast or any other provider as long as I get my video streaming without me paying any more than I am now. But the entire topic of Net Neutrality has become bogged down in a morass of politics and misconceptions—particularly the now popular idea of two Internets (high-speed and low-speed) as misunderstood by John Oliver. Before we can properly discuss Net Neutrality on the Internet, we must first understand how it actually works. Most people don't.

How the Internet Works

The foundation of the Internet is the [Internet Backbone](#). It is often thought of as a massive pipe of high speed data capacity which ties all of the various service providers and users together. In reality it is a complex network of high speed connections (normally fiber optic cable) sponsored by companies, universities, governments, and other institutions. The only thing they all have in common is the fact that they are connected together. Anyone who wants to use the Internet must pay to connect to the backbone whether they cover the cost to build their own piece of backbone, they are a content provider (e.g. Netflix, Google, Facebook) connecting to the backbone, or a user connecting through an ISP. The more you pay the faster the connection you can get.

The problem is that actual Internet speed is based upon the slowest link in the chain of network legs. Even when you have the fastest possible home connection, if the Web site you're visiting has a low bandwidth connection to their provider, you will be stuck at that slower speed. You may think that your ISP is throttling you when you're merely visiting a site with an unusually slow connection to the Internet. Plus, if the Web service doesn't have

enough bandwidth of its own, it might slow down even more during peak usage periods. It's not necessarily the fault of your service provider—although you will be tempted to suspect them.

There are at least two (maybe three) prices paid for every Internet service delivered. The user's fee in the form of monthly Internet service charges for the home connection and the content providers fees they pay to hook up to the Internet to provide their offerings. (The third possible fee is for paid services such as Netflix which charges a monthly fee to subscribers.) Users are well aware of their costs, but they often overlook the costs others who do business in cyberspace must pay for their connection.

Even something as simple as setting up a Web page has a fee. If you want to sell something on your Web page then you will pay more. If you want to regularly serve content to the Internet, then there is an additional cost to connect in the form of more bandwidth. The more you want to provide, the more bandwidth you need (and the more it will cost). While the user is always paying something to connect to cyberspace, the servers are also always paying a price for a connection. It's important to remember that there is charge at both ends.

The fee that Netflix charges its customers not only covers the cost of the movies and television shows it streams, but it pays for Netflix's own Internet connections as well. That's why it appears that Comcast is out of line when, as a middleman, it tries to squeeze out a few more dollars out of Netflix by slowing down Netflix delivery to Comcast customers. But, is that what actually happened?

Bandwidth Is Limited

There is no such thing as unlimited bandwidth. Every Internet system regardless of how big it gets can run out of bandwidth—especially during peak periods. When this happens everything slows down through data management by the providers or routers. This may look like throttling to the user—and to some extent it is—but until the system is upgraded with more capacity, there is no other alternative.

Note: You may have experienced this bandwidth clogging within your own home. Try downloading a huge file while one family member is streaming videos on a tablet, another is using Skype, and you're watching Netflix in the family room. You may see some video rebuffering while your download takes an extra long time. You could fix the problem by buying more bandwidth from your ISP, but do you really want to spend the extra dollars.

This type of slowdown is what happened during the period when Netflix was losing quality of service as shown in Figure 1. While it looked like Comcast was throttling Netflix in an effort to extort a deal, something else was going on.

[Don't get me wrong. I'm not defending Comcast nor its shoddy reputation (or any throttling

it may have done in the past), but the truth needs to be told.]

Netflix was using another pipeline to deliver their service to Comcast (and other providers) by the name of [Cogent Communications](#). Cogent is a Tier 1 optical IP network provider which operates a piece of the Internet backbone. This was how Netflix connected to the Internet to deliver their streaming service to its users through Comcast and any other ISPs. It turns out that the slowdown problem was [caused by Cogent's data management policies](#) when it became bogged down by too much bandwidth demand. "Cogent now admits they slowed down Netflix's traffic, creating a fast lane and slow lane." Yes, prioritization was occurring and some traffic was being slowed down (Netflix), but it wasn't caused by Comcast. Cogent had in place traffic rules giving lower priority to Netflix when the pipeline became clogged. (While the recent FCC ruling bans prioritization, intermediate Internet providers have no choice when they run out of bandwidth. Even if all customers are slowed equally, it does not necessarily have equal impact.)

One of the reasons for Netflix making the deal with Comcast was to cut Cogent out of the loop. It wasn't extortion by Comcast, but a business decision by Netflix to deliver better quality service to Comcast customer. Both Netflix and Cogent allowed the public to believe that the problem was almost all Comcast's fault. As for the cost of the deal to Netflix, I don't have the numbers, but I would guess that there wasn't much impact since Cogent would no longer get paid for the Netflix/Comcast traffic.

As evidence that Netflix was not coerced into the Comcast deal, Netflix continues to aggressively [seek more deals](#) with more cable companies. Plus, looking back at John Oliver's chart (above), remarkably Netflix quality improved with virtually all the operators after the February 2014 deal with Comcast. Could it be that once the Comcast load was taken off of Cogent, it was easier to deliver to everyone else as well?

The fast lane/slow lane argument is a fiction. The fact is that there have always been lanes of all speeds available for the asking—as long as you can afford it. As Internet companies grow, they pay more for more bandwidth. The fast lane/slow lane analogy would be valid if competing traffic is throttled, but the mere fact that some companies can pay more for a faster connection does not violate Net Neutrality—as long as everyone has the same opportunity to buy that bandwidth.

It's not that Comcast doesn't want to do data throttling and use data caps—they have done it in the past. It just hasn't helped either their reputation or business model. With other companies (such as Google Fiber) introducing new competition, Comcast is reluctant to push things too far. Even if they did, they would likely be slapped down in the near future.

New Net Neutrality Rules

This week the FCC voted to implement a new set of Net Neutrality rules. The old ones were

thrown out by the courts a couple of years ago. While there are a few differences which will give the new rules new teeth, it's difficult to get a sense for what the real impact might be. It doesn't help when politicians chime in.

In [support of Net Neutrality](#), Obama gave a "November 2014 speech advocating Net neutrality. He did not say that all bits should be treated equally but specified four rules: no blocking, no throttling, no special treatment at interconnections, and no paid prioritization to speed content transmission." Obama's speech writer has the right idea, but now when Obama says anything half the country is disinclined to believe him—regardless of the topic. It doesn't help when someone like Senator Ted Cruz says, "Net Neutrality is Obamacare for the Internet." That just ticks off the other half of the country and makes people take sides on a topic very few people truly understand. But we shouldn't let the politicians cloud our judgment.

The truth is that most politicians strongly favor the concept of Net Neutrality. The disagreement is around the edges. Those on the left feel that the government should make things right by sticking their fingers in—which rarely turns out as planned. Those on the right fear any sort of government involvement as the first step down a slippery slope of regulation and taxation.

While it is quite possible that the FCC ruling which will treat ISPs more like public utilities could turn into a regulatory mess, it's much more likely that it will have little impact on anything. What will be put in place is a system for filing complaints if an entity does blocking or throttling, gives special treatment at interconnections, or prioritizes to speed up content transmission based on the interests of the ISP.

It certainly won't stifle innovation or investment as claimed by the cable companies. There is very little new thought to be found in those organizations in the first place and they are disinclined to make much new investment regardless of the new rules—at least not as long as they can drain every last penny out of the old lines. Companies like Google and Facebook either support the new rules or shrug their shoulders. Cell phone company [Sprint has bucked the trend](#) and responded with a great big "Meh." By classifying Internet service as a public utility it may actually increase competition giving outsiders (such as Google Fiber) access to local infrastructure which has been previously blocked by some state laws and municipalities.

Historically, monopolies need to be regulated or they run rampant. That's why local utilities and other public concerns with no competition are regulated. While the cable companies are monopolistic in many communities, the market is chipping away at them. Between Google Fiber slowly introducing gigabit connections to possible WiMax (or other similar) wireless Internet installations, the road is not safe for the cable companies.

It's not likely that the startups who will ultimately threaten Facebook and Netflix will even be noticed until it's too late. There is little evidence that serious Internet roadblocks are being thrown in their path. If they run into problems, then they will be able to file a complaint with

the FCC. But, by the time their filing is verified and resolved, they will be out of business anyway. The goal of Net Neutrality is not to pick winners and losers or even control Internet speeds. The objective is to prevent the troll sitting outside your door (your ISP) from charging unfair fees to the people you choose to let in through your Internet connection. It's your bandwidth and you should be able to use it the way you want.

Now for the true truth: The FCC action is going to be tied up in the courts for so long that we will forget that there was ever an argument about Net Neutrality. In the meantime, if you experience a slowdown in your Internet connection (and you have no alternative ISP in your area) call the cable company and yell at them—even though it may not be their fault.

Jack is the publisher of ComputerEdge Magazine. He's been with the magazine since first issue on May 16, 1983. Back then, it was called The Byte Buyer. His Web site is www.computoredge.com. He can be reached at ceeditor@computoredge.com. Jack is now in the process of updating and compiling his hundreds of articles and columns into e-books. Currently available:

Recently released is Jack's FREE AutoHotkey book, [AutoHotkey Tricks You Ought to Do with Window](#), available exclusively at ComputerEdge E-Books in the EPUB for e-readers and tablets, MOBI for Kindle, and PDF for printing formats.

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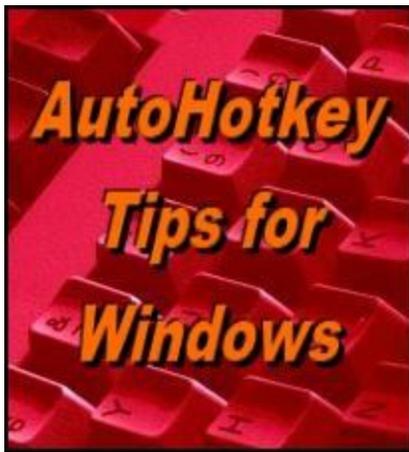
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and [That Does Not Compute!](#), brilliantly drawn cartoons by Jim Whiting for really stupid gags by Jack about computers and the people who use them.



**Yet, One More
Reason to Use
AutoHotkey
Free Software!**

**Don't
Overlook the
ErrorLevel
Variable
When Writing**

AutoHotkey Scripts

“Make Your AutoHotkey Scripts More Robust by Using ErrorLevel” by Jack Dunning

By implementing ErrorLevel traps in our AutoHotkey scripts, we can stop apps from hanging while telling the user what they did wrong.

As I mentioned in another unrelated article, a gentleman by the name of Rafa Gómez is translating [A Beginner's Guide to AutoHotkey](#) into Spanish. He is both an AutoHotkey enthusiast and has an excellent command of the English language. (He translated [WordPress Websites: Beginner's Guide to Easily Building a Website](#) by another author into Spanish which is now available on Amazon.) While working on the translation Rafa found a few typos and a couple of needed corrections. *[We regret the errors.]*

First, the Web site l.autohotkey.net no longer makes Web referrals to the new primary AutoHotkey Web site ahkscript.org. There are a number of instances of this dead URL in the three books where I had used the l.autohotkey.net link—which worked fine as a referral until that site was killed. Now when clicking on one of those links you will get some type of "Web site not found" message. I'm working feverishly to fix all the links and republish the books, but it will take a little time. (Yes, I use search-and-replace, but the original format needs to be done chapter by chapter while checking for other inconsistencies.) I've temporarily taken the *AutoHotkey Applications* book off sale at Amazon.

In the meantime, if you run into this problem when clicking a link in one of the e-books (or earlier AutoHotkey columns), you can repair the link in your browser by replacing the l.autohotkey.net portion of the URL with ahkscript.org. I use a hotkey:

```
::*::ahkl::ahkscript.org
```

Just highlight l.autohotkey.net and type `ahkl` to correct the URL and go directly to the right site. Everything else in the URL is the same.

I'll let you know when the updated versions with the corrected links of the books are available. You should be able to download them again—either from Amazon or the ComputerEdge E-Books Web site, depending upon where you purchased. If you've run out of downloads on the ComputerEdge E-Books site, then send an e-mail with your order number and we'll give you more. It will be noted in the book description at both places when the updated version of a book is available.

New to AutoHotkey? See our [Introduction to AutoHotkey!](#)

The second issue is the topic of this column: Using *ErrorLevel* to bulletproof your scripts.

What Is *ErrorLevel* in AutoHotkey?

While working on the Spanish translation, Rafa noticed that the scripts in Chapter Four of the *Beginner's Guide* (AutoHotkey column dated [July 20, 2012](#)) would hang up if no text was selected prior to using the hotkey combination—at least until something actually appeared in the Clipboard. This was caused by the [ClipWait command](#) which would pause indefinitely waiting for something to show up in the Windows Clipboard. Rafa pointed out that adding a timeout to the command and using the *ErrorLevel* variable would trap and fix this problem.

*[In my defense, when I wrote that chapter I was just learning AutoHotkey myself and the thought of using *ErrorLevel* was not on the top of my list. Since that time, I've used error trapping a number of different way for specific purposes in various scripts, but I now realize that it is worth investigating its use whenever using a command has *ErrorLevel* available. It can make scripts more robust and tell you when you did something wrong.]*

The original basic script from the book converts the selected text into all uppercase (capital letters):

```
^u::                                ; CTRL+U converts text to upper
Clipboard:= ""
Send, ^c    ;copies selected text
ClipWait
StringUpper Clipboard, Clipboard
Send %Clipboard%
Return
```

This snippet clears the Clipboard, then sends CTRL+C, which copies the selected text to the Clipboard. The [ClipWait command](#) is used to pause the script until the Clipboard is actually loaded with the selected text. This prevents the script from outrunning itself.

The problem is that the *ClipWait* command without a timeout parameter will indefinitely pause the script until something appears in the Clipboard. If there is nothing previously selected to copy, then nothing is copied into the Clipboard and script hangs up. After that point even selecting and rerunning the hotkey combination (CTRL+U) will not fix the problem. (You can

get the script to move on by selecting the text and manually hitting CTRL+C.) From the point of view of the user, the script is broken. To make sure that this doesn't happen an error trap must be added.

When there is a timeout parameter used in the *ClipWait* command, the variable *ErrorLevel* is set to 1 whenever nothing shows up in the Clipboard prior to timeout (otherwise 0 is returned). The first step is to add a timeout to the *ClipWait* command:

```
ClipWait 0
```

When 0 is used as a timeout the script will pause for ½ second. Otherwise, enter the number of seconds you want the script to wait.

Next, add an [If conditional](#) trap for *ErrorLevel* evaluating true (1):

```
If ErrorLevel
{
    MsgBox, No Text Selected!
    Return
}
```

When using the *If* command and a variable standing alone, if it evaluates *True* (1), the condition is met and the lines of code between the curly brackets run. If not, the code is skipped. All that's really needed is the *Return* command, but by adding the *MsgBox* command with "No Text Selected!" the user is informed of the likely error.

The following is the original script with the error trap for included:

```
^u::                                ; CTRL+U converts text to upper
Clipboard:= ""
Send, ^c ;copies selected text
ClipWait 0
If ErrorLevel
{
    MsgBox, No Text Selected!
    Return
}
StringUpper Clipboard, Clipboard
Send %Clipboard%
Return
```

This error trap protects your script in two ways. First, it prevents the script from hanging while it waits. Second, the *Return* command stops execution preventing the lines which follow in the snippet from inadvertently affecting something other than the original target. Depending upon what your script does, not exiting a subroutine on an error can have unpredictable results. I have gone back and made this change to all of my regular hotkeys in my autoload-on-boot script that use *ClipWait*.

Other AutoHotkey commands (*WinWait*, *KeyWait*, etc.) have similar use for the variable

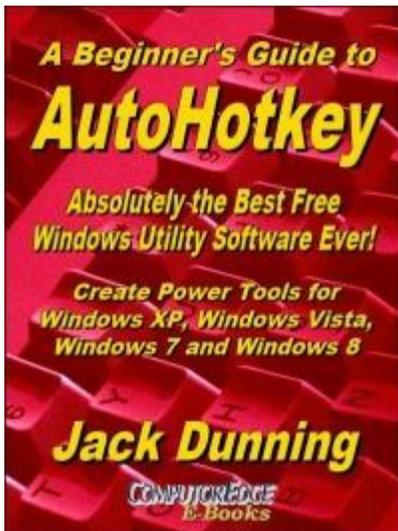
ErrorLevel, plus most of the commands use either *ErrorLevel* or and/or the *UseErrorLevel* parameter (*RunWait*) in some manner. It is well worth the time spent to understand how the various error routines can be used to improve your AutoHotkey scripts.

* * *

Check out many of the way AutoHotkey can be used! See these [Free AutoHotkey Scripts and Apps](#).

Free! [AutoHotkey Tricks You Ought To Do With Windows!](#) This e-book includes both those tips and the reference material (Table of Contents and indexes) from the other three AutoHotkey books. Pick up a copy free and share it with your friends.

* * *



The second edition with more chapters and an index to the AutoHotkey commands found in the book is available in e-book format from Amazon (and other formats—EPUB and PDF— at the ComputerEdgeBooks Web site linked below). Jack's [A Beginner's Guide to AutoHotkey. Absolutely the Best Free Windows Utility Software Ever!: Create Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8](#) (preferred, EPUB format for iPad, Android, and computers; MOBI for Amazon Kindle; and PDF for printing) offers a gentle approach to learning AutoHotkey. (Also available from [Amazon](#) for the Kindle and Kindle software on other devices.)

Building Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8, AutoHotkey is the most powerful, flexible, *free* Windows utility software available. Anyone can instantly add more of the functions that they want in all of their Windows programs, whether installed on their computer or while working on the Web. AutoHotkey has a universality not found in any other Windows utility—free or paid.

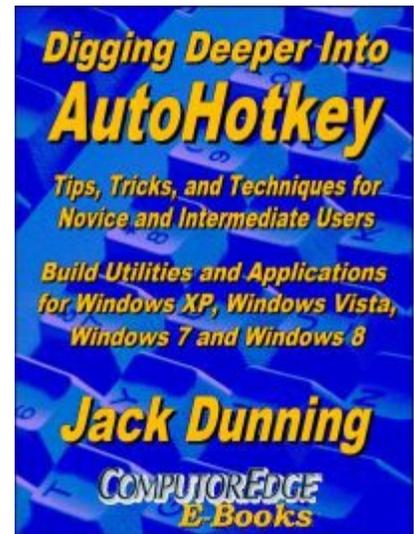
Based upon the series of articles in *ComputerEdge*, Jack takes you through his learning experience as he explores writing simple AutoHotkey scripts for adding repetitive text in any program or on the Web, running programs with special hotkeys or gadgets, manipulating the size and screen location of windows, making any window always-on-top, copying and moving files, and much more. Each chapter builds on the previous chapters.

[For an EPUB \(iPad, NOOK, etc.\) version of A Beginner's Guide to AutoHotkey click here!](#)

[For a PDF version for printing on letter size paper for inclusion in a standard notebook of A Beginner's Guide to AutoHotkey click here!](#)

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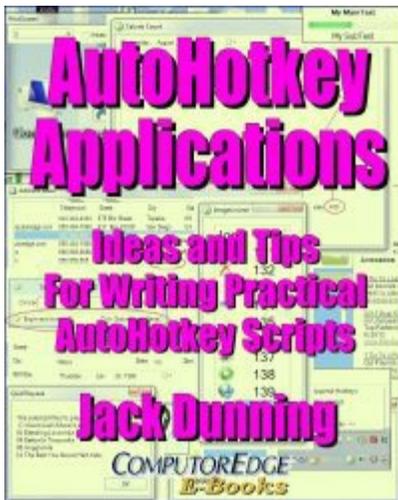
Jack's second AutoHotkey book, [*Digging Deeper Into AutoHotkey*](#) (preferred, EPUB format for iPad, Android, and computers; MOBI for Amazon Kindle; and PDF for printing) is comprised of updated, reorganized and indexed columns from *ComputerEdge* is now available. Since the columns were not all written in a linear fashion, the book has been reorganized and broken up into parts by topic. The book is not for the complete beginner since it builds on the information in [*A Beginner's Guide to AutoHotkey*](#). However, if a person is reasonably computer literate, they could go directly to this book for ideas and techniques without the first book. (Also available from [Amazon](#) for the Kindle and Kindle software on other devices.)



[For an EPUB \(iPad, NOOK, etc.\) version of Digging Deeper into AutoHotkey click here!](#)

[For a PDF version for printing on letter size paper for inclusion in a standard notebook of Digging Deeper into AutoHotkey click here!](#)

* * *



Jack's third AutoHotkey book [*AutoHotkey Applications*](#) (preferred, EPUB format for iPad, Android, and computers; MOBI for Amazon Kindle; and PDF for printing) is an intermediate level book of ideas and applications based primarily on the AutoHotkey GUI command. The book emphasizes practical applications. The book is not for the complete beginner since it builds on the information in the other two books. However, if a person is reasonably computer literate, they could go directly to this book for ideas and techniques without the other books. There is an extensive index to the ideas and techniques covered in the back of the book. (Also available from [Amazon](#) for the Kindle and Kindle software on other devices.)

[For an EPUB \(iPad, NOOK, etc.\) version of AutoHotkey Applications click here!](#)

[For a PDF version for printing on letter size paper for inclusion in a standard notebook of AutoHotkey Applications click here!](#)

Jack is the publisher of ComputerEdge Magazine. He's been with the magazine since first issue on May 16, 1983. Back then, it was called The Byte Buyer. His Web site is

www.computoredge.com. He can be reached at ceeditor@computoredge.com. Jack is now in the process of updating and compiling his hundreds of articles and columns into e-books. Currently available:

Recently released is Jack's FREE AutoHotkey book, [AutoHotkey Tricks You Ought to Do with Window](#), available exclusively at ComputerEdge E-Books in the EPUB for e-readers and tablets, MOBI for Kindle, and PDF for printing formats.

ComputerEdge E-books is offering his [AutoHotkey Applications](#), an idea-generating intermediate level e-book about using the AutoHotkey Graphical User Interface (GUI) command to write practical pop-up apps for your Windows computer. (It's not as hard as it sounds.)

[Hidden Windows Tools for Protecting, Problem Solving and Troubleshooting Windows 8, Windows 7, Windows Vista, and Windows XP Computers.](#)

Jack's [A Beginner's Guide to AutoHotkey, Absolutely the Best Free Windows Utility Software Ever!: Create Power Tools for Windows XP, Windows Vista, Windows 7 and Windows 8 and Digging Deeper Into AutoHotkey.](#)

Our second compilation of stupid *ComputerEdge* cartoons from 2011 and 2012 is now available at Amazon! [That Does Not Compute, Too! ComputerEdge Cartoons, Volume II: "Do You Like Windows 8 or Would You Prefer an Apple?"](#)

Special Free Offer at ComputerEdge E-Books! [Jack's Favorite Free Windows Programs: What They Are, What They Do, and How to Get Started!](#).

[Misunderstanding Windows 8: An Introduction, Orientation, and How-to for Windows 8 \(Seventh Edition\)!](#)

[Windows 7 Secrets Four-in-One E-Book Bundle,](#)

[Getting Started with Windows 7: An Introduction, Orientation, and How-to for Using Windows 7,](#)

[Sticking with Windows XP—or Not? Why You Should or Why You Should Not Upgrade to Windows 7,](#)

and [That Does Not Compute!](#), brilliantly drawn cartoons by Jim Whiting for really stupid gags by Jack about computers and the people who use them.



Wally Wang's Apple Farm

“The Price of Cheapness” by Wally Wang

Wally Wang's Apple Farm

The Price of Cheapness; Recognizing Reality; The Life of a Copycat; Project Titan; The Next App Gold Rush; Defining Your Own Acronyms.

Windows enthusiasts love to point out how inexpensive PCs are compared to Macintosh computers (except when they aren't), such as comparing the cost of a [Mac Pro to a similar Windows PC](#) or comparing the cost of a [5K iMac to a Dell 5K monitor](#) where the price for a Dell monitor was initially equal to a 27-inch iMac and its 5K monitor).

One reason why PCs are so cheap is because manufacturers use cheaper parts to make them. It's much less expensive to use plastic for a typical PC laptop compared to carved aluminum for a MacBook Pro.

A second reason why PCs are cheaper is because manufacturers partially subsidize the low price by pre-installing bloatware on PCs that annoy users to buy the full version of the bloatware program. The problem is so bad that even Microsoft points out the [problems of bloatware](#) as a reason to buy a PC from a Microsoft store instead of from one of their so-called hardware partners.



After 30 days without Signature

After 30 days with Signature

Figure 1. Microsoft points out how Windows looks with and without bloatware over time.

The big problem with cheap PCs is that they're rarely designed to focus on the customer first. Instead, they're designed to focus on the manufacturer's profits first with the customer dead last. That's why Lenovo now risks tarnishing their entire reputation just because they wanted to make a little extra money by pre-installing adware on to their computers that [compromised security](#).

When you focus solely on your own profits, you'll rarely benefit the customer. Vista's annoying security feature didn't improve the customer's experience or productivity and neither did Windows 8's confusing tile interface. Customers wanted a safer, more secure version of Windows that would make their life easier, not make their life harder and more frustrating. Microsoft basically released Vista and Windows 8 without caring what their customers really wanted just so they could make money selling a new operating system.

When you have companies willing to exploit the customer so they can make a little extra money, you have to wonder why so many people would enthusiastically support any company that continually takes advantage of them. How many people would willingly support a thief who keeps breaking into your house and stealing your valuable possessions? How many people would not only willingly support a thief stealing from them, but then get angry at anyone who points out this dysfunctional relationship?

There's more to choosing a computer than just price. Would you trust a car mechanic who uses a Swiss Army knife to work on your car because it's cheaper than buying specialized tools? Would you trust a heart surgeon to give you a triple bypass operation by cutting costs on sterilization so he can make a little more money on every surgery?

If a company focuses on pleasing its customers, the profits will come naturally. If a company focuses on profits while ignoring its customers, it may succeed for a while but eventually even its most loyal customers will get tired of being exploited and go somewhere else.

Business isn't only about profits but about establishing relationships with customers, which will lead to higher profits. The more you please the customer, the more the customer willingly keeps buying from you. The more you exploit the customer, the less likely the customer will buy anything from you.

Yet Lenovo will probably keep selling PCs because people will look at the price of a Lenovo PC and think only of the initial cost while completely ignoring the long-term costs such as compromised security and decreased user experience. Perhaps exploiting the customer isn't such a bad strategy after all. As long as so many people only look at price just to save a penny or two, there will always be plenty of customers for companies to exploit again and again.

Best of all, the people these [companies exploit](#) will turn around and become their biggest and most vocal defenders despite being taken advantage of multiple times. As long as there are people insane enough to allow themselves to be exploited and then turn around to defend their exploiters, ignoring the consumer in favor of extra profits is probably a valid business strategy after all.

Recognizing Reality

For decades, Steve Ballmer did everything he could to protect Windows, even to the point of renaming practically everything in sight with the Windows name whether it worked with Windows or not (Windows RT, Windows Live, Windows Phone, Windows Mobile, Windows CE, Windows Mail, Windows Embedded, etc.). Now Satya Nadella, Microsoft's new CEO, has a different approach. Instead of ignoring reality, he's decided to embrace it.

Bloomberg reports that "Nadella and his executives make the point whenever they can that the day could come when new and younger generations of computer and software users might not use its products. At one board meeting last year, Windows chief Myerson showed a slide with pictures of students using [Apple Macs and iPads](#), according to Microsoft spokesman Peter Wootton."

According to a report from Sanford C. Bernstein, Windows, which once dominated computing and ran on more than 90 percent of computing devices, now runs on 11 percent of computers and gadgets. If Microsoft's own CEO can finally recognize that Windows no longer dominates the computer market and that the company may need to deal with this new reality, it's time for even the most die-hard Windows enthusiast to accept this trend as well.

Microsoft recently [acquired Sunrise](#), a calendar app for iOS and Android. Earlier, Microsoft [acquired Acompli](#), which the company morphed into Outlook for iOS and Android. Satya Nadella has brought Microsoft back to its roots of developing software for people who want it on their platforms of choice.

With clear leadership, Microsoft looks to have avoided the disaster that Steve Ballmer kept insisting they smash into at full speed. When you ignore reality, you get someone like Steve Ballmer who stubbornly flushes money down the toilet to compete with rivals. When you acknowledge reality, you get someone like Satya Nadella willing to look for opportunities even if they threaten Windows.

When you deal with reality, you'll always be more successful. When you cling to delusions, you'll always be frustrated and confused. The [Windows era is over](#) and even Satya Nadella is smart enough not to waste time arguing otherwise.

The Life of a Copycat

Trying to copy Apple is often an exercise in futility. Samsung succeeded by making larger smartphones, but when Apple released the larger screen iPhone 6 and 6 Plus, Samsung's sole advantage evaporated overnight along with most of their [smartphone profits](#).

While Samsung piggybacked on the iPhone's success, other Android manufacturers lowered prices to compete against Samsung in the low-end market while Apple took the bulk of the

profits in the high-end market, leaving Samsung with 60 percent less profits.

Samsung tried to create their own operating system called Tizen, but there's little reason for anyone to switch to Tizen, especially since Tizen has far fewer apps than Android and basically works exactly like Android. Samsung created an enterprise-security platform called Knox to differentiate themselves from other Android manufacturers. Then Google decided to embed parts of Knox in an upcoming Android update, leaving Samsung with no real advantage over competitors.

Samsung's latest tactic is to purchase [LoopPay](#), a rival to Apple Pay. The theory is that people will buy Samsung smartphones so they can use mobile payments like LoopPay just like iPhone users can use Apple Pay.

The problem is that Google Wallet essentially does the same thing, so Samsung users will now get to choose between Google Wallet or LoopPay, while every other Android user will just be using Google Wallet. Will people suddenly flock to Samsung smartphones just to use LoopPay when they could just use Google Wallet instead?

It's hard to differentiate your products when you sell the same products as everyone else. When you're in the commodity business, your only advantage is price, which means cutting your profit margin thinner while working harder to earn less money. Then if someone cuts their prices lower than yours, you lose whatever temporary advantage you ever had.

The real way to make money is to satisfy a need. Walmart initially had no competition because they opened stores in small towns that Sears and K-Mart deliberately avoided because they thought small town markets weren't profitable enough. Now Walmart has moved into the larger towns and killed both Sears and K-Mart in the process.

For Samsung or any other company to succeed in the long-term, they need to sell products that solve problems, not just copy whatever seems popular at the moment. Microsoft flushed billions down the toilet by copying others such as Zune (copying the iPod), Silverlight (copying Flash), Bing (copying Google), Windows CE (copying Palm Pilots), Windows Phone (copying the iPhone), and Surface tablets running Windows RT (copying the iPad). Imagine if Microsoft had invested that same amount of money pursuing technology that would solve a pressing need that other companies were ignoring. Wouldn't Microsoft be better off selling useful products and being a leader instead of wasting time and money on copycat products that they later abandon anyway?

You can never be a leader if you're always trying to be a follower. Samsung is still learning that lesson while Microsoft looks like they've finally woken up. Being a copycat is a short-term, temporary route to profits, but in the long-term, it's far more profitable to lead by solving important problems instead.

Project Titan

Why do many bright and talented people leave major companies like Google and Microsoft? It's usually because they're bored. After all, optimizing Google ads or redesigning Microsoft Word aren't exactly the most exciting projects to tackle. To keep talented people, companies need to give them exciting projects to pursue. At Apple, one of those interesting projects is [Project Titan](#), Apple's rumored car design ambitions.

What's particularly interesting is that Apple has hired several prominent automotive engineers along with offering \$250,000 signing bonuses plus a salary 60 percent above typical salaries. Even more interesting is that Apple's investment in LiquidMetal seems destined more for car manufacturing than for iPhone, iPads, or MacBook laptops.

LiquidMetal is supposedly twice as strong as titanium while being lighter as well, yet titanium is stronger than standard steel while being half its weight, which makes LiquidMetal dramatically stronger and lighter than steel. Since LiquidMetal can be easily molded, its high strength to weight ratio makes it ideal for creating lighter and stronger frames and cases. A LiquidMetal car would be easier to make while being lighter and stronger than a steel one. It took years until the Big Three auto makers understood the importance of aerodynamics and drag to increase fuel efficiency. Think any of the Big Three auto makers are looking at ways to make their current manufacturing process and business model obsolete?

When you take a long-term view of the future, you can plan way ahead of the competition. When you only care about quarterly profits, it's easier just to copy whatever rivals are doing. With Apple owning a perpetual and exclusive license to [LiquidMetal technology](#), it's a safe bet that rivals won't be able to get their hands on this technology any time soon. By forcing rivals to rely on off-the-shelf commodity products that everyone else can use as well, Apple is creating a niche market for themselves and dooming rivals to fighting each other by racing to the bottom with price cuts and razor thin profit margins selling nearly identical products.

Has anyone ever associated the word "innovation" with the Big Three auto makers? With minor improvements every year and the same tired business model of forcing customers to deal with obnoxious sales people intent on ripping them off in car dealerships, the car industry deserves to be shaken apart. Expect Detroit to plunge further into the depths of a Third World country and expect the Big Three auto makers to whine about getting another billion dollar bailout from the government.

The Big Three auto makers are clinging to a business model that's little different from the 1900's. Watching them flail and fall apart over the next decade should be another fascinating disaster to see as people initially deny that the auto industry needs to change, then get delusional by pretending the current auto industry will magically recover its former glory. Anyone who depends on the auto industry should have gotten out in the 1950's. If they're still in the auto industry, they need to make plans to bail out as soon as possible if they wish to avoid watching Detroit fall apart all over again.

Just ask all those people in Waterloo, Canada, the headquarters of Blackberry, how the loss of

a major company can sink the prospects of an [entire city](#) seemingly overnight. The Big Three auto makers are already relying on laws to [prevent Tesla](#) from selling cars directly to consumers, so what will they do when people start ignoring the Big Three auto makers like people ignoring Blackberry and Nokia smartphones?

Detroit's Big Three auto makers are another disaster of foot-dragging and antiquated thinking that's been long overdue for change. If you thought the slow demise of Windows and Blackberry couldn't possibly happen, you can get a rerun of the same situation by watching the Big Three auto makers slowly collapse before our eyes in the next few years thanks to more [innovative upstarts](#) like Tesla and Apple.

The Next App Gold Rush



When Apple allowed independent developers to sell apps for the iPhone, many people got rich. The developer of the iFart app was even making \$10,000 a day. Since apps were so new and the App Store was still small, these initial app developers could rake in a fortune.

Now that the App Store has gotten crowded, developers are having a harder time making money because it's too easy to get lost in the crowd. That's why developers are anxiously awaiting the introduction of Apple Watch. As soon as Apple Watches arrive, people will start downloading Apple Watch apps and a [new gold rush](#) will

start all over again.

The quickest way to develop your own Apple Watch apps is to grab a copy of Xcode and start learning Apple's Swift programming language. You'll also need to sign up as an Apple Developer to get access to the beta version of Xcode, which contains tools for creating Apple Watch apps.

Even if you don't plan on developing apps for the Apple Watch, all you have to do is follow the Apple Watch to see how others will immediately make money off it. You can ride along the success of the Apple Watch or you can pin your hopes on a pale imitator and wonder why others are making money off the Apple Watch while you work harder and make far less following a rival product.

* * *

Many people use common acronyms like LOL when texting, but you can use those same acronyms when writing on your Macintosh. To make your writing look a bit more

[*Beginning Programming for Dummies*](#)

[*Beginning Programming All-in-One Reference for Dummies*](#)

[*Breaking Into Acting for Dummies with Larry Garrison*](#)

[*Strategic Entrepreneurism with Jon and Gerald Fisher*](#)

[*How to Live with a Cat \(When You Really Don't Want To\)*](#)

[*The Secrets of the Wall Street Stock Traders*](#)

[*Mac Programming For Absolute Beginners*](#)

[*Republican Fairy Tales \(Children's Stories the 1% Tell About the Rest of Us\)*](#)

[*The Zen of Effortless Selling with Moe Abdou*](#)

[*The 15-Minute Movie Method*](#)

[*Math for the Zombie Apocalypse*](#)

[*How to Write a Great Script with Final Draft 9*](#)

[*Making a Scene: The Science of Scene Structure.*](#)

In his spare time, Wally likes blogging about movies and writing screenplays at his site "[The 15 Minute Movie Method](#)," finding interesting news stories about cats at his site "[Cat Daily News](#)," giving advice to authors who want to self-publish e-books at his site "[The Electronic Author](#)," and providing the type of advice he wishes someone would have told him when he was much younger at his [personal Web site](#). Wally can be reached at wally@computoredge.com or you can follow him on Twitter [@wallacewang_com](#).



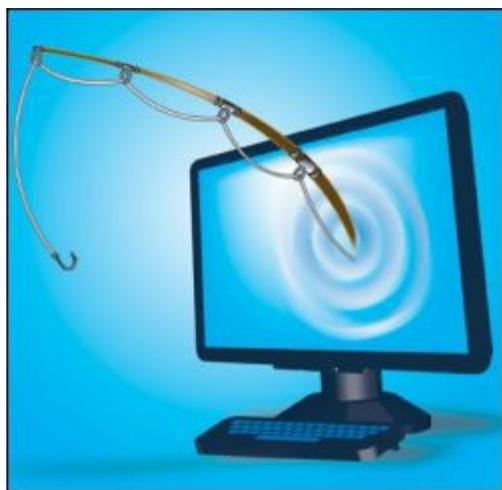
Worldwide News & Product Reviews

“The latest in tech news and hot product reviews.” by Charles Carr, News and Reviews Editor

Billion Dollar Cyberheist Caused by Phish-Prone Employees; Billion Dollar Cyberheist—Part 2; Mobile Shopping Is on the Rise, What This Means for Businesses and Consumers; The Book of Unwritten Tales 2 Fun Facts; 128 GB Mobile Alternative to External Hard Drives.

Experts: Billion Dollar Cyberheist Caused by Phish-Prone Employees

The online security company [KnowBe4](#) urges US institutions to take effective action to train employees before they fall victim to phishing attacks. According to KnowBe4:



Spear-phishing has been around for awhile and is one of the most preventable forms of attack, but can be one of the most dangerous. Companies and financial institutions can be vulnerable, as the results of a spear-phish have dire consequences.

In what appears to be one of the largest and most highly sophisticated cyberheists ever, more than 100 financial institutions in 30 countries have been the victim of a cyberheist that lasted in some cases nearly 2 years. Most of the banks that were hit are in Russia, but also include banks in Japan, Europe, and the United States. The gang appears to be the first international cybermafia, a group of cybercriminals from Russia, Ukraine and other parts of Europe and China. Kaspersky could not release the names of the banks because of nondisclosure agreements. The Times said that The White House and FBI have been briefed on Kaspersky Lab's findings, and Interpol is coordinating an investigation. Kevin Mitnick, KnowBe4's Chief Hacking Officer said, "Even after 20 years, social engineering is still the easiest way into a target's network and systems, and it's still the hardest attack to prevent."

KnowBe4's CEO Stu Sjouwerman stated, "While this cyberheist is considered very sophisticated, spear-phishing is one of the most preventable and affordable. You would expect

the finance industry to set the bar very high and have employees trained within an inch of their lives not to fall for such an attack. We would highly encourage financial institutions to take a look at their training methods and beef them up accordingly. "

The gang responsible for this has been dubbed the " Carbanak cybergang" because of the name of the malware they used. As reported by the *NY Times* on Saturday, February 14th, the gang managed to stay under the radar and inside bank networks by sending spear-phishing e-mails to employees containing infected attachments which were opened, infecting the workstation.

Once access was provided the gang tunneled into the network and found employees who were in charge of cash transfer systems or ATMs. Next they installed a remote access Trojan, which gave them full access so they could study what these key employees did. At that point they were able to tell ATMs to dispense cash or transfer larger amounts to accounts all over the world. It appears that well over 100 bank networks (that we know of) have been penetrated for years, and the attacks may still be happening.

According to reports from the *Times*, one Kaspersky client lost \$7.3 million through A.T.M. withdrawals alone, while another lost \$10 million from the exploitation of its accounting system. In some cases, transfers were run through the system operated by the Society for Worldwide Interbank Financial Telecommunication, or Swift, which banks use to transfer funds across borders. It has long been a target for hackers—and long been monitored by intelligence agencies.

Chris Doggett, of Kaspersky North America, said: "This is likely the most sophisticated attack the world has seen to date in terms of the tactics and methods that cybercriminals have used to remain covert."

According to Dutch security firm Fox-IT, Carbanak is the same group that was uncovered by Group-IB and Fox-IT in a Dec. 2014 report which referenced the attackers as the "Anunak hackers group" which stole reams of data from Staples, Sheplers and Bebe.

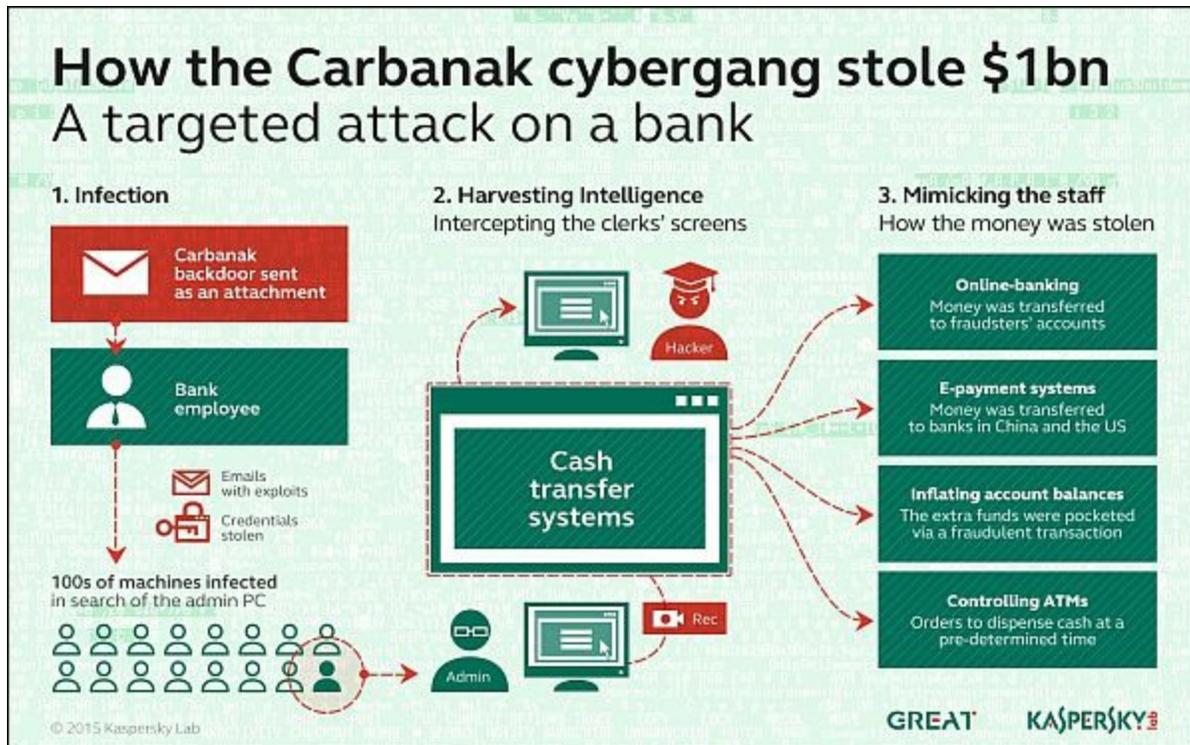
Sjouwerman offered, "Security Awareness Training is really needed for every employee in any organization, not just banks. It allows you to put in place a more effective human firewall and protect your corporate and financial assets."

For more information or to get a free phishing test to see how "phish-prone" your employees are, visit www.knowbe4.com.

Billion Dollar Cyberheist—Part 2

Regarding the above-mentioned recent cyber theft of a billion dollars, Mark Skilton, a Professor of Practice at Warwick Business School notes:

This sophisticated attack, targeting many banks and entry points using malware is, I fear, much more of a 21st century-style attack, in that it is incremental and hidden from view, living in the dark spaces between the Internet and the massive ecosystem of data and Web sites.



This was all done in small amounts in what I call a digital "stealth attack" where unseen watchers can observe the daily movement and activity of organizations to sneak into it to take data and value from many sources. This is harder to define and needs a new kind of attack response to that highlighted in the recent Stanford University Cyber conference, chaired by President Barack Obama, which called for the need for industry, technology companies and government to share data and work together more.

The fundamental big concern this type of attack raises is that security monitoring cannot just test for vulnerabilities that are obvious and noticeable such as Distributed Denial of Service, where a Web site is shut down by two or more hackers, and data theft. This is a cyber-threat of massive proportions, on an industrial scale, where eavesdropping and small changes need to be detected. I suspect this is just the tip of the iceberg of what may have been stolen and we may never know the full extent of the theft.

It is possible to do several things about this from coordinated cyber intelligence to specialized cyber-threat monitoring. It requires a much more rigorous monitoring and coordinated

response system between banks and industry to combat the cyber threats that can move and work across, and between them, in a virtual world. This is also not just a banking issue as potentially any website and company is a target.

Mobile Shopping is on the Rise, What This Means for Businesses and Consumers

[WebiMax](#)'s Nicole Romeo writes in this week:



In today's digital age, most consumers are using mobile devices, such as smartphones and tablets, to shop online. Consumers use their mobile devices to shop at home and to assist them when they shop in physical stores. While they are in the store, more mobile shoppers are turning to their smartphones to look up information about a brand and view product reviews before making a purchase.

In a recent survey from Contact Solutions, 85% of participants reported actively shopping from home on their mobile phones, even when there were other digital devices available within reach, such as a computer. The report also showed 26% of consumers use their mobile devices for in-store purchases or to find deals. Similarly, according to the results of MarketLive's most recent Performance Index report, consumers have increased their spending on smartphones by 125% across all product categories.

"With the rise in mobile shopping, businesses need to make sure their websites and apps are up to speed," said Hugh Sinclair of Shopping Blitz, an internet marketplace that provides over 350 of the best brands of clothing, shoes, accessories and lifestyle products. "Websites and apps that don't load quickly, provide adequate information, or deliver optimal user experience will cause retailers to lose out on customers and sales."

Hugh Sinclair of Shopping Blitz is currently available to discuss the rise of mobile shopping, as well as how retailers can adjust their websites to better appeal to mobile shoppers. If you are interested in scheduling an interview, please contact Nicole Romeo at nromeo@webimax.com.

The Book of Unwritten Tales 2 Fun Facts

Nordic Games has recently released the point-and-click adventure game, the Book of Unwritten Tales 2 for PC, Mac, and Linux. We're hoping to get someone assigned to reviewing it in the near future but, until then, here are some "fun facts" about the game and its development:

- An average BoUT2 scenery has the size of approximately 100 MB... more than all LucasArts Adventures from 1986-1993 (including Monkey Island 1 and 2) combined.
- Our build server cooked 3667 builds. 4824 pesky bugs have been removed, and during the Early Access phase, 12 updates have been made.
- Did you know that Doug Cockle, the voice actor of The Book of Unwritten Tales 2's clumsy adventurer Nate Bonnet, also lends his voice to Geralt of Rivia, striking terror (and blades for that matter) into monsters' hearts in No Man's Land in The Witcher® 3: Wild Hunt? BoUT2 also features more than 30 hours of top-notch voice acting in English and German.



- Saving BoUT2 on 3.5" discs would take about 3,125 floppy discs. Stacking all the discs on top of each other ... one would be stacking discs for quite a while.
- Critter (although he cannot speak in a traditional sense) has more than 140 unique expressions/sounds. Takalak!! (This is Critter for "excellent").
- During the development of The Book of Unwritten Tales 2 two children were conceived and born, and another (roughly) 11.342 attempts were made!

- During the development of BoUT2, Panama's gross domestic product increased by 9.2 billion Dollars, 4.757.733.840 hectolitres of rain poured down in the city of Bremen, and 26 Nobel Prizes were awarded. Pure coincidence?

Check out the Book of Unwritten Tales 2 [on Steam](#). This lists for \$34.99.

128 GB Mobile Alternative to External Hard Drives

Name: JetDrive Lite 350

Manufacturer: Transcend Information, Inc.

Web site: www.transcend-info.com

Price: ~\$40 (64 GB) or \$80 (128 GB)

Mobile devices for digital file storage come in various shapes, sizes, and prices. Many of these devices have pocket-sized form factors, store up to a terabyte or two on an enclosed hard drive or solid state drive, and cost as little as 10¢ per gigabyte. However, they can be somewhat inconvenient to use and susceptible to loss or theft because they're external to the user's computer. A potentially more convenient and secure option would be Transcend Information's JetDrive Lite for MacBooks.

JetDrive Lite (JDL) is a diminutive file-storage device that comes in a correspondingly diminutive package (Figure 1). The package consists of a cardboard box measuring 3" X 4.5" X 0.5" and weighs about 1 oz. Its contents include two transparent plastic inserts, two pamphlets (one is a warranty card in 15 different languages; the second contains advertising about other storage products by Transcend), and a JDL. Instructions and specs are printed in a diminutive typeface on the box's flip side.



Figure 1. Transcend Information's JetDrive Lite storage device is small and therefore ships in small packaging. The package's front has two pictures—one showing this device alone, the other showing it in a MacBook Pro's card slot. Two pamphlets also are included with the device in its package.

This product bears a striking resemblance to the storage media cards ([secure digital \[SD\]](#)) used in many digital cameras. Although JDL resembles SD cards, it has two differentiating features. One is that JDL (unlike SD cards) is based upon [multi-level cell](#) NAND flash memory technology. The other differentiating feature is JDL's additional enlargement along one edge (Figure 2). This enlargement plays an important functional role which we'll discuss momentarily.



Figure 2. Although JetDrive Lite closely resembles a secure digital card, it uses a different technology (multi-level cell

NAND flash memory) and has a unique enlargement (arrows) along one edge.

Transcend produces [four JDL models](#) corresponding to the four different card reader slots in supported MacBook models. Each of these four JDL models comes in two capacities—64 or 128 GB. The model for this review is the 128 GB JetDrive Lite 350; it is compatible with the card reader slot in mid 2012 and early 2013 15" MacBook Pros.

Official specs for the JDL 350 are as follows (www.transcend-info.com):

Capacity—64/128 GB

Flash type—MLC (http://en.wikipedia.org/wiki/Multi-level_cell)

Max. performance—read 95 MB/s, write 60 MB/s (dependent upon host hardware, software, and usage)

Operating voltage—2.7 - ~3.6 V

Operating temperature—-25° C (-13° F) to 85° C (185° F)

Durability—10,000 insertion/removal cycles

Warranty—limited lifetime

As mentioned above, JDL has an enlargement on one of its edges that differentiates it from SD cards. This enlargement's function is to provide a handle for the user to physically insert the JDL into, and remove it from, the MacBook's card reader slot. This feature is essential because the device's size makes it flush with the MacBook's side (Figure 3). Without this enlargement, JDL would be almost impossible to remove from the card slot.



Figure 3. The enlargement that distinguishes JetDrive Lite from other storage cards functions as a handle for the user to grab when inserting or removing this device from a MacBook's card reader slot where this product's form factor fits flush against the computer's side.

For convenience, a user could leave JDL in the card reader slot rather than carrying it

separately while on the go and risking misplacement or theft. Leaving JDL inserted is a big advantage because this device has sufficient capacity and performance to store a user's iTunes library, iPhoto library, a Windows-containing [virtual machine](#), or even a bootable OS X installation (e.g., a beta or an old version) instead of storing it on the MacBook's internal drive.

The convenience and potential safety of leaving JDL inserted in a MacBook's card reader slot is compromised by three noteworthy drawbacks. The most important drawback is battery drain. JDL (like other storage devices) consumes some of the MacBook's electricity while the device is monitored by OS X's file system (i.e., reading and writing). A potential workaround would be to insert JDL into the card reader slot and then eject its icon from OS X's Desktop (right- or control-click JDL's Desktop icon and select Eject from the contextual menu that displays). Under this condition, JDL can remain in the card slot without draining the MacBook's battery.

Ejecting JDL's icon is only a workaround rather than a solution, however. That's because the device's contents will be unavailable until the user physically removes JDL and inserts it again, resulting in a resumption of battery drain. This workaround calls attention to a second drawback—unless the user's fingernails are sufficiently long, JDL can be pretty challenging to remove from the card reader slot; having a tweezers available might be a good idea.

One additional drawback of leaving JDL inserted in the card reader slot is that it [can interfere](#) with a change in standby mode that Apple implemented in MacBooks built in 2013 or later. Standby mode begins after three hours of regular sleep mode on 2013 or later MacBooks; it begins after only one hour on older MacBooks. If JDL is left in the card reader slot for more than three hours of regular sleep mode with the product's icon displaying on the Desktop, the MacBook will not enter standby mode and consequently will use more electricity than if JDL had been ejected.

Transcend's solution for the third drawback above is a feature of their [JetDrive Toolbox](#) freeware utility. This utility has a Power Save feature which automatically ejects JDL before the user's MacBook enters Standby mode and, importantly, remounts JDL's icon on the Desktop when the MacBook wakes up. Very handy! Unfortunately, JetDrive Toolbox does not include a feature for restoring JDL's icon to the Desktop (thereby making the device's contents available for use) after the user has ejected the device.

If the above issues seem complicated and/or technical, hold on...here's one more. Older MacBook models were equipped with SD card readers, newer ones come with Secure Digital Extended Capacity (SDXC) card readers. The former is controlled by the MacBook's Universal Serial Bus (USB) while the later is controlled by the MacBook's Peripheral Component Interconnect bus (PCI-E).

Owners of older MacBooks equipped with SD card readers controlled by USB can use a third-party utility like [Mountain](#) to eject JDL and restore its Desktop icon without having to physically remove and reinsert the device. However, owners of new MacBooks with SDXC

card readers cannot similarly use utilities like Mountain because they support USB-controlled devices, not PCI-E-controlled ones.

Good news—a Web search found [a solution](#) for owners of new MacBooks with SDXC card readers. After ejecting JDL, its Desktop icon can be restored by copy-pasting the following commands to OS X's Terminal program and pressing the Return key.

```
sudo kextunload -b com.apple.driver.AppleSDXC
sudo kextload -b com.apple.driver.AppleSDXC
```

A friendlier use of these commands is to copy-paste them into, and save for future reuse, a new AppleScript script or an Automator workflow (note that the resulting script or workflow will display an authentication dialog after launch, prompting the user to enter her/his login password).

```
do shell script "sudo kextunload -b com.apple.driver.AppleSDXC
sudo kextload -b com.apple.driver.AppleSDXC" with administrator privileges
```

During testing for this review, use of the above commands in a saved AppleScript script successfully restored the ejected JDL's icon to the Desktop without any noticeable negative side effects. Readers who use these commands do so at their own risk or peril.

Here are some additional tips and tricks for using JDL.

- Adding JDL to Spotlight System Preference's Privacy tab will minimize the risk of an indexing glitch that allegedly can happen with SDXC cards (<http://apple.stackexchange.com/questions/62478/re-mount-ejected-sd-card-without-reinserting>).
- JDL's file format out of the box is [exFAT](#); this format is Microsoft's proprietary one specifically for high-capacity flash RAM drives. An important feature of exFAT is its multi-platform compatibility—JDL can be used with OS X and Windows on a MacBook that has a virtual machine and/or BootCamp installation. However, users who want to install OS X (e.g., a beta or old version) on JDL will need to use Apple's Disk Utility program to reformat this device for Mac OS Extended (Journaled) and GUID partition table.
- Users with a need for speed might have reservations about JDL's official benchmarks—read 95 MB/s, write 60 MB/s. However, the standard caveat "your mileage may vary" really is appropriate here because [JDL's performance](#) will be affected by the host MacBook's hardware and the owner's usage model.

For readers who might be curious, here are my benchmark tests' results.

- time to copy 18 GB file from MacBook Pro's internal flash drive (PCI-E) to a 1 TB external hard drive (7200 rpm) via Thunderbolt—3' 55"

- time to copy same file from same 1 TB external hard drive to MacBook Pro's internal flash drive via Thunderbolt—3' 24"
- time to copy same file from MacBook Pro's internal flash drive to JDL via SDXC reader—5' 13"
- time to copy same file from JDL to MacBook Pro's internal flash drive via SDXC reader—3' 17"

In conclusion, JDL is an highly useful file storage device which conveniently, cleverly, and safely takes advantage of a MacBook's built-in SD or SDXC card reader that otherwise might go largely unused. Price sensitive MacBook owners might balk at JDL's price per GB compared with that of a higher capacity mobile hard drive. However, they would be missing JDL's point—you're paying for the convenience of avoiding a mobile hard drive's relative bulk and requisite cable while on the road. Life is filled with compromises, and JDL's price tag is one well worth making.



Review contributed by Barry Fass-Holmes

Multiple award-winning author Charles Carr has written more than two thousand newspaper articles, magazine stories, and columns for many publications including the San Diego Union Tribune, The Californian, The North County Times, Parent Magazine, ComputerScene, and ComputerEdge Magazine where he has been an editor for more than two decades. He is also a television producer/director with shows both currently airing and in production on Cox Cable and elsewhere.

In the 1990s, Charles wrote 3DHouse, a complete inside-and-out virtual reality tour of his family's log home in Southern California. One of the first virtual reality programs ever created, 3DHouse enjoyed tens of thousands of shareware downloads on all major portals. He also sold the rights to Radio Shack and Egghead Software. 3DHouse has since been featured in many books and articles about VR.

Carr has also been commissioned to write and/or directed many of his own stage plays. Several years ago, Carr and others looking for ways to help organizations struggling in difficult economic times, founded Art Animates Life (www.artanimateslife.org).

To date, Art Animates Life, a CA incorporated, federal non-profit, has raised tens-of-thousands of dollars for San Diego area disaster relief, an arts non-profit and municipal gallery, a community outreach center, and several struggling community theaters.

Several years ago Carr was commissioned to adapt and direct the beloved Dickens classic, A Christmas Carol. The play, titled "Mr. Scrooge & Mr. Dickens," has sold out So Cal theaters for the past several years. Six shows will take place Dec. 2013 to benefit the San Marcos

Historical Society.

Another original play, "All the Time in the World," has been performed many times and garnered broad acclaim from audiences and critics alike. Carr is working on a brand new adaptation of the classic Hitchcock thriller, "The Lady Vanished," to be performed spring 2014.

Carr has won many writing accolades, including San Diego Press Club awards for Best Column Writing, Best Consumer Writing, and Best Arts and Entertainment. He has repeatedly taken top honors in San Diego Songwriter's Guild competitions for his original musical compositions.

Carr is also a noted producer, director, and videographer. Several of his documentaries can currently be seen on So Cal's Cox Cable. Since its inception he has produced the Fallbrook International Film Festival's red carpet event and panel discussions.

Charles receives dozens of requests each year to appear on Southern California television and radio stations to talk about important tech events. He also speaks from time-to-time to high schools and organizations about his eclectic life in the arts.

Learn more at www.charlescarr.com.



Editor's Letters: Tips and Thoughts from Readers

“Computer and Internet tips, plus comments on the articles and columns.” by ComputerEdge Staff

"AutoHotkey Calorie Counter Script," "Too Much Detail?" "Not Enough Detail," "House Wiring Adapters"

AutoHotkey Calorie Counter Script

[Regarding the August 23, 2013 [A Free Windows Calorie Counting App column](#):]

- 1) Selecting data does not work the way you indicate, or not well. Better is to position cursor at line "serving size" then drag mouse up to name of food.
- 2) CTRL-ALT-C does not work, only right click on system tray icon, "Import selected"
- 3) Editing is clunky. Calories do not change when serving size is adjusted. Have to adjust calories manually.
- 4) Can food list be exported to Excel?
- 5) This app is a nice start, when is the next update due out?

-Angry Thinker, Outside USA

Hi, Angry! Thank you for your comments. The Calorie Counting AutoHotkey script is intended as a learning example for AutoHotkey. I realize that it is not complete and there are numerous improvements that can be made. It has been left for people learning AutoHotkey to finish the way they want it.

In response to your comments:

1. *How well selecting the food data works may depend upon which browser you're using.*
2. *The import key combination is actually CTRL+WIN+ALT+C not CTRL+ALT+C. The icon tray menu uses that same combination.*
3. *Probably a bug.*

4. *If you change the extension of one of the history backups to CSV from TXT, then you should be able to open it in Excel. To get just the food list: sort unique—if Excel does that. A routine similar to that which creates the food list could be written to export the list as a CSV (Comma Separated Values) file. It would probably be fairly easy to do when the food list is loaded into the program, but again I don't know when I would have time to do that.*

5. *I don't know when I will be working on the calorie counting app again. One major change I would make would use a Regular Expression (RegExMatch()) to extract the food data from the Web site. This should be more accurate and not require highlighting the exact area on the page—only the URL.*

I'm currently working on an AutoHotkey Regular Expression book for beginners (beginning RegEx, not beginning AutoHotkey) which is taking up most of my time.

-Jack Dunning , ComputerEdge

Too Much Detail?

[Regarding the February 6 [Digital Dave column](#):]

Editorial...Detail is good. Brevity may be better.

-Gary Weinstein, California

Not Enough Detail

[Regarding the February 6 [Digital Dave column](#):]

Re: the Windows Media Player "buffering" problem, I noticed the buffer adjustment you mentioned is under the Performance section called "Network Buffering." But the OP said he was using the laptop to play MP3 files without networking. Are you saying "Network Buffering" is worth trying even if he is playing MP3 files stored on the same computer?

-Ron Cerrato, San Diego

House Wiring Adapters

[Regarding the February 6 [Digital Dave column](#):]

This is another case where more detailed information may be needed, in this case, about the OP's setup and devices. Dave's answer assumes there is an IP conflict. Yet the OP claims that

his problem only occurs when using the house-wiring adapter pair instead of an Ethernet cable.

An IP conflict seems reasonable if the household-adapters required IP addresses or if both routers were configured to assign IP addresses. The later doesn't seem to be the case since he tried the exact same router setups with and without the household adapters.

Rephrasing his final question, with only the most important words left in, I read it as follows: "What could be causing the same Wi-Fi router to act differently...only when it is getting its signal through the house wiring (via. Netgear adapters)?" If that really is the problem, what's left to cause an IP problem is the possibility that the adapters use IPs.

I checked online to see if they do, and found a discussion about a similar problem here: <http://forums.anandtech.com/showthread.php?t=2216343>. In that thread, the OP made one additional post to answer earlier questions, which included this sentence: "The Powerline adapters don't have IP addresses, they're pre-paired out of the box and don't require any configuration as long as you're only using the two." That discussion consists of 19 posts with no real resolution, other than a comment about noisy power lines. The OP in that thread seems very knowledgeable about networking, referencing tests done with wireshark.

-Ron Cerrato, San Diego

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House Wiring Adapters

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