

# The Forecast is Cloudy: The future of computing and how it will affect you and the economy

By Robin Elizabeth Wolfson © 2011

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You're probably hearing a lot about cloud computing these days and how it's being praised as being the death of the PC. In fact, this week's eWeek announced that the era of the PC was officially over. Actually, cloud computing is just a way for the big companies to freshen up and KEEP their revenue streams. In other words, where their money comes from and how much they can get. It's also the ultimate anti-piracy strategy. But cloud computing represents a much more profound change, a massive, world-wide paradigm shift: a shift away from physical stuff towards non-physical stuff, and that has massive consequences for all of society.

## Why Cloud Computing?

Cloud computing is not simply the latest-and-greatest, "Hey, cool, I can store all my music on Amazon's cloud" idea. Instead, cloud computing is a major paradigm shift\* in the way humans have done business for thousands of years: by buying and owning things. Once you bought something, you owned it. After that, you only bought a new something when yours broke or you lost it or gave it away. I've had my blender for nearly forty years. How'd you like to buy a new blender every year? Or all your kitchen appliances? Or rent them by the month? That's what's called a paradigm shift. A change in a major way of thinking so profound that it affects everyone. Like the development of the scientific method. Or the notion that the earth rotates around the sun, instead of the other way around. Or, here are some good ones: freedom, equality, and equal rights. Or, in quantum mechanics, the idea that the laws that apply to large things are different from the laws that apply to small things.

The first hint of this paradigm shift started decades ago with the advent of cable television (actually, it really started with the telephone service which replaced much of written communication, but cable is where we all really started noticing the difference). Broadcasting wasn't free anymore; you had to pay by the month, in short, rent. The same paradigm shift has already expanded to cell phones and cable/dish television. You rent your cable or satellite connection, the same way you rent your cell phone service. Now, it's happening with computers. The whole idea of owning your own software, to say nothing of being able to be an independent user not connected to the virus-ridden Internet 24/7, is going out the window. Nothing will ever be the same again.

Here's what happened. One day Microsoft and Adobe and IBM and HP and Dell and all the big software and hardware companies woke up and realized to their horror that they'd actually SOLD their products to people who (gasp) might not upgrade to the new version or, even worse, in the case of software, copy and distribute it. The "cloud" is the ultimate anti-piracy scheme. (This means you, China.)

## How it will work

First of all, you will no longer own your own software. What you will own is a gadget the computer industry has for years been calling “an Internet appliance” or a “thin Internet client.” Now, when you hear the word “appliance” you might be thinking of, say, a dishwasher, or a washer or dryer, maybe a small appliance like a blender or a coffee maker. Wrong. Think “cell phone.” Because that’s how the Internet Service Providers will be thinking of it; in fact, they already are. Here at DataStep, we’ve already bought our first two dirt-cheap Internet appliances: a couple of little notebooks chock full of RAM and with almost no software. Instead of Microsoft Office, we’re switching to OpenOffice.org, which is FREE. It’s part of the international OpenSource project and it’s available in nearly all languages and on all platforms: Mac, Windows, Unix, Linux, whatever. And, unlike the latest grotesque versions of Microsoft Office, it’s simple, clean, and efficient. To get your copy, just click here [OpenOffice.org](#) or click the OpenOffice.org logo under the menu. Of note: Microsoft is now offering a “reduced functionality” version of Office. Great. Now can they get rid of the incredibly ugly menu bar at the top?

Instead of what we now think of as computers, you’ll have something that looks vaguely like a cross between a tablet and a cell phone, say an Apple iPad or the Motorola (now Google) Xoom. It will be small, flat, and thin. Not small enough to put in a pocket, at least until the designers start re-designing pockets, which they will, along with purses and carry-bags, because we’ll all need somewhere to put the gadget. And note that I’m saying gadget, singular. One of the problems now is that there are just too many gadgets. A recent industry survey estimated a current national distribution of about seven gadgets per person. Cell phones, Blackberries, laptops and tablets, Wii devices and other gaming controls, iPods or other MP3 players, cable/satellite television receivers, even remotes for your television or to open or lock your car, the list goes on and on. Sometime very soon, manufacturers are going to start combining gadgets. They’ll have to. In fact, they’ve already combined the cell phone and MP3 player, but that was inevitable. You don’t need too much room for either one. The next step will to combine the reader and computer. After all, wouldn’t it be neat to unfold your cell phone or eReader and have a decent sized screen to play your favorite game?

The gadget itself might have room for a DVD drive (maybe, but we’ll discuss that later). Current cell phones and eReaders have screens too small to display very much information, so we’ll probably have some kind of gadget that unfolds to offer a larger display, for, say, those of us who want to read more than one paragraph at a time. Amazon’s Kindle is nice for reading, but still too small for real computer functions like writing, spreadsheets, spiffy game displays, or Internet surfing. And have you seen the size of the keys on the Kindle DX? Great for mice-feet, I suppose, but hardly for human fingers. (Who do they test these things on?) Hence the idea about unfolding. And when you open it up, you’ll have a not-too-ridiculously small screen that will function as your computer interface (screen) and e-reader. For a keyboard, the screen will display what look like keyboard keys. The “keys” might even give you some sort of tactile response, so you’ll know when you’ve actually hit one. In fact, just the other night I saw an ad for (I think) Verizon about a nifty little device that unfolds! Pretty cool, huh? Unfortunately, the keys are still the itchy-bitsy ones you have on the average cell phone. So you won’t be doing anything practical there. And, wait a minute, now that everyone has or craves the most gigantic TV screen they can find, suddenly we’re going back to screens the size of a whopping 3.5 inches?

As for the software, you won’t own that at all, so you won’t have a choice as to whether or not you upgrade. Instead, you will have to rent the software from the various providers, Microsoft, Adobe, Apple, gaming companies, whomever. And your helpful service provider will upgrade the software for

you. (Remember when I said cloud computing was the ultimate anti-piracy device?) Here's an example. I keep my email on the Yahoo server because I'm betting they keep their servers in better shape than I do my computer. And I'm willing to upload my music purchases to Amazon's Cloud, but I'm also going to make damn sure I download them to my own device. Because here we're getting into the fine print.

Now, don't get me wrong. I love Amazon. I have since the day I first heard of it something like fifteen years ago, and it's only gotten better in the meantime. But Amazon is currently making a very big deal about how you automatically get five gigabytes of music storage for free whenever you buy a single MP3 download. If you buy an entire MP3 album, you automatically get upgraded to twenty gigabytes of storage. Pretty keen, huh? Now let's read the fine print. If you click the "Learn more" button on Amazon's main "cloud" page, you find that the 20 GB upgrade is just for the first year. After that, it's \$20 per year. Okay, twenty bucks isn't that much, only about \$1.70 a month. For now. But there are two problems here. The first is that you're going to be paying rent to the providers of every piece of software you use: word processing, spreadsheets, desktop publishing, games, and just about anything you've already bought. If you use software from a number of different providers, those numbers are going to add up. But so what? You're willing to pay a few bucks a month, say ten or twenty or even thirty, adding up to, say, between \$120 and \$360 a year. Still, not so bad. And here we come to problem the second: wait until the providers decide to increase their prices. Or you use more applications or store more data. But, even so, it's still probably cheaper or not much more in the long run than laying out \$350 for a basic laptop. Which can keep running for years.

But now we come to the nasty part. Remember all those Microsoft ads about how you should be running their latest operating system on your computer? Vista? Windows 7? Or Apple's ads for OS 10? I've been in this business a long, long time, and I can barely count the number of times some software manufacturer came out with a new operating system or some new razzle-dazzle upgrade of their software applications (We're even starting to trash old versions of Microsoft Office and operating systems.) And have you noticed how, purely by chance, I'm sure, the new operating system won't run on your current computer because you don't have a fast enough processor or enough RAM or a large enough hard drive? Which means that you have to buy a new computer IF (and that's a very big "if") you want or, more importantly, need to run the latest and greatest operating system and software.

So far, hardware and software purchases, have made up a big part of the various manufacturers' revenue. But some people might not want to upgrade. Some people might think the already bloated-beyond-belief version of Microsoft Word is just fine and dandy for them. But, as go operating systems, so go the programs (applications). And soon, not immediately, but soon, the requirements of the operating systems and the software applications won't be compatible with your current Internet appliance. Recently, after two days on the phone with Adobe trying to figure out why my CS2 version of GoLive (the HTML editor I use to maintain this web site) wouldn't install on my new laptop, it turns out that GoLive isn't compatible with Windows 7 (which came with the new laptop), and I should upgrade to Adobe's Creative Suite 5.5 so I could (LEARN TO) run Dreamweaver, which is ridiculously expensive for a simple web site. So I went back and installed it on another laptop running Windows Vista. But it's not just Adobe, everyone will be doing the same thing. Get a new application, or even upgrade an existing one, and suddenly, by golly, by gosh, you have to go buy yourself a new Internet appliance, or laptop or operating system. And don't forget, you can't run Microsoft's Internet Explorer 9 unless you have at least 2 GB of RAM. See? A tiny tweak to the operating system or application or even your Internet browser, and suddenly you're out in the cold.

Remember when I said, “Think ‘cell phone.’”? So, how often do you buy a new cell phone? How long a contract do you sign up for? We’re old and poor and cheap these days, so when our two-year contract runs out, I usually go into the Verizon store and say, “What new phones can I get with no money out of pocket?” And, of course, the answer is always, “Nothing you’d want to own.” You always want to upgrade to the latest and greatest. Now that I’ve retired and am trying to make that long time dream of writing come true, anything I write I could do perfectly well with any of the past four or five versions of Word. In fact, now that we’re poor again, we’ve already converted two machines to OpenOffice.org. After all, not only is it free, but all the files it creates are completely compatible with those of Word, Excel, and PowerPoint. But do you know about OpenOffice.org? Do your friends? Of course not. OpenOffice.org is an international, collaborative project developed by volunteers and available online for free, so they don’t have multi-million-dollar advertising budgets.

## **Security: the ugly truth**

And now we get to the really nasty part. According to a recent study published in eWeek (a very reputable industry journal), something like two-thirds of the “cloud” providers don’t consider the security of their operating systems or applications, or, more importantly, the data you’ve stored on their servers, to be their responsibility. Which means that you’re paying them every month for systems and software that may or may not work and for storing your data on servers that can be breached by any fairly talented fifteen-year-old.

So now you own nothing, really, except a neat little device that you’ll have to trade up every few years (and I’m being generous here; my real guess would be more like every one or two years, just like cell phones). But, even worse than being essentially a slave to the Internet and the storage and applications providers, forking over your monthly dues, you won’t even have a guarantee about the safety of your data or your music, your movies, your cherished family photos, or anything else you store on the provider’s server.

## **The Anti-piracy Solution**

I know this all sounds fairly dire, and I know that everyone in the computer biz is publicly saying, “Pish tosh, we would never do anything like that. You’re just being backward, an old stick-in-the-mud. This is a great new idea. Everyone will have the latest and greatest, and no one will ever, ever again copy and distribute our software without bloody well paying for it.” And that’s how the anti-piracy solution works. Because the software won’t reside on your cool little Internet appliance; instead, you’ll have to log on to your Internet provider to do something as simple as writing a letter. (At which point, of course, Office Assistant will pop up and say, “It looks like you’re writing a letter. Would you like some help?”)

So, you’re probably thinking, “Well, this stuff isn’t going to affect me. Clouds are just for big companies.” Guess what Facebook is? Yep, it’s a cloud. Just like Twitter and WordPress and every social networking and blogging site out there. So if you’re uploading your precious thoughts and photos or even (Heaven forefend) writing original stuff there, make sure you keep a copy for yourself. Offline. On your hard drive. Or, better yet (because Robin’s Rule #2\*\* is that all drives fail eventually) on some external storage like a CD, DVD, or flash drive.

## **The Word is “Streaming”**

Remember when I said your Internet appliance might not even have a DVD drive for watching movies or playing games? That’s because the providers’ goal is to control the broadcasting of everything. Whatever you currently do on your computer you will have to do online. Bye-bye, DVD s. Bye-bye user independence. Now, whenever you consider moving, your first thought will be, “How can I connect to the Internet?”

And then there’s the money, and this is the perfect time to discuss the money. Cloud computing is a brave new business model that magically transforms purchasers into renters/subscribers. The manufacturers are trying to recapture their revenue stream. Except that, in the future of cloud computing, that revenue stream has turned from merely a highly lucrative stream into a Mississippi-500-year-record-level flood, a surging river that will consume everything in its path. Remember how we all used to be so impressed that the Mississippi River was a whole mile wide? Well, this year it was three miles wide. And raging. And headed straight for Baton Rouge and New Orleans. Now think of that three-mile-wide surging river in terms of the amount of new money that will start pouring into the silicon companies once cloud computing takes over. They’ll tweak an operating system or modify a game and, oops, you’ve just lost your Internet connection because your current “Internet appliance” isn’t compatible with the new system. Which means you have to buy a new one. Because, when it comes to connectivity, we’re all addicts. And the hardware and software companies are the pushers.

## **Streaming and the economy**

Up to now, software of various kinds has generally been distributed on physical media. Now, what if the software companies could eliminate the cost of physical media? Imagine the savings they could achieve. Which I’m sure they’ll pass on to you, the consumer. NOT. This is another very attractive reason for the software companies to switch to streaming distribution. Everything is live. Nothing is fixed. Which also means the elimination of all those jobs associated with physical media. Think about the people who made the materials for the CD’s and DVD s that have been mailed out for all these years. Think about the people who make the plastic for the discs themselves, and for the disc cases. Think about the people who make the paper and the ink, and the people who make the machines that produce the plastic and the discs and the paper and the ink. And what about the people who make the mailers the discs go into? And the paper and ink and adhesive for those mailers.

Sure, you’re saying, but streaming is so green. It eliminates the need for all those physical materials. But what about the people who make those materials? You want to go further? Think about the reduced demand on the postal system, and the clerks, sorters, and mail carriers who deliver those materials. Then think about how they’ll buy the clothes they wear and those comfy shoes they have to buy, and the people who make all those clothes and shoes, and the people who make the cloth and thread and leather and plastic and vinyl and zippers and buttons, and so on and on and on.

## **The Ultimate Paradigm Shift: Welcome to Incorporeality**

So, when you think about cloud computing in these terms, suddenly it’s not just ownership that’s going out the window. Suddenly it’s a shift from the physical (the corporeal) to the non-physical (the incorporeal) and all that incorporeality comprises. As it is, even the amount of actual cash we use is dwindling as everything becomes electronic. So what about the jobs of the people who make the paper and the ink and the wrappers and the machines that print, count, sort, store, and package money?

Each shift away from corporeality to incorporeality means a loss of jobs, especially the loss of jobs involved in the production of stuff. Real, physical stuff. And the loss of those jobs means a reduction in the overall demand for stuff that other people produce. It's not just a vicious circle; it's a downward spiral. And with the world's population still spinning out of control, there will be more and more people willing to work for less and less money, depressing wages in every industry. It's one of the first things you learn in economics classes: supply-and-demand doesn't just apply to just prices of stuff, it applies to labor (read: jobs), as well. The more production, the more jobs. The less production, the fewer jobs. And, hence, less demand for labor, at which point, with the supply of labor increasing, but the demand for labor decreasing, the average wage, which is the intersection of the supply of labor and the demand for that labor, plummets. This is what economists refer to as the theory of surplus labor. And that's the effect of this particular paradigm shift.

## **Disclaimer**

Now, please, feel free to disregard everything I've said. No one ever believes me when I predict things. There was once a Trojan princess named Cassandra to whom Apollo gave the gift of prophecy, with the catch that, while she could see the future, no one would ever believe her. Way back around 1994, I asked a Microsoft rep when we'd be able to query databases over the Internet. His response was, "Why would you want to?" Well, guess what runs Amazon. Databases. Same as every Internet storefront you shop at. Same as the Internet Movie (look, it's even in the name) Database. So call me Cassandra, but don't say I didn't warn you.

\* The phrase "paradigm shift" first entered the common language when Thomas S. Kuhn published his landmark book, *The Structure of Scientific Revolutions*, all the way back in 1962.

\*\*Robin's Rule #1 is: "Never pass a law you can't enforce." Just in case you were wondering.