

Living in a Cloud

The Present Future of Wireless Connectivity

By

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What are the probable futures of massive broadband clouds in America. With the statutory transition from digital to analog television less than three years away, the possibilities may be endless, but the probabilities are much easier to calculate.

As the various frequencies that are currently occupied by analog television signals become available at auction, we should see an extraordinary amount of activity by the big Internet, communications, media, entertainment and electronics companies all moving towards a single goal – life in the cloud.

I've appended this very short introduction with two excerpts from my other writings on the subject. One from my book, *Television Disrupted: The Transition from Network to Networked TV* and the other from my weekly column on mediapost.com. They simply set the stage for what is sure to be years of discussions, ventures, legislative challenges and lawsuits as upstart organizations attempt to disintermediate the multi-billion dollar infrastructure of the wired world.

Many of us already live in a pseudo-wireless world. We have our cell phones and PDA's and WiFi connected laptops. Reasonable people might posit that life in a broadband cloud would not be much different than it is today. After all, we're simply talking about wireless video, voice and data which is pretty much what we have right now. Perhaps ... but this line of thinking is way too computer-centric or "old school" for what's coming.

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For example, you could argue that personal computers have not changed much in the last 25 years. We still use word processing, spreadsheets and databases. Yes, Apple Pie, Visicalc and DBMaster (all old programs for the Apple II+ computer) are as valid today as they were back in the day -- the only real improvement has been speed and storage capacity. But speed and storage capacity are non-trivial improvements.

Printing presses have been around for well over a thousand years. And, although scholars identify the "Diamond Sutra" (circa 868 A.D.), as the earliest printed book, the art of printing most likely predates this work. In 1041, movable clay type was first invented in China and, more known to western culture, Johannes Gutenberg invented his famous movable type printing press in 1436.

By 1450, Gutenberg was printing up a storm and, if asked, he would not have had a problem creating a personalized, printed letter addressed to every land owner in Germany's Rhine Valley. The cost -- a day's wages for a master and an apprentice for several years -- would not have been a practical use of time or money. Junk mail was not invented until the beginning of the 20th century when Mr. Sears created his first "direct mail" campaign. The cost of personalization was still out of reach. Your name was "occupant" and, if you were greeted with a letter, you were "Dear Friend" or "Dear Customer."

It was not until the advent of the high-speed laser printer (circa 1977) that serious personalization became so inexpensive that there was no reason not to treat every piece of printed matter as if it were a personal, one-to-one communication.

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Living in a high speed broadband cloud will change everything. Remember the day that you decided to leave your computer on 24/7? It was probably the broadband connection (maybe an ISDN line or maybe your first DSL connection) that changed your computer from a business tool to a lifestyle tool. Remember the first day you looked up a movie schedule on online as opposed to finding the information in the newspaper? Remember the day you realized that you could not actually be a citizen of the modern business or academic world without at least two different email accounts?

These were not subtle changes, they were profound. Making your computer a part of the “doing of life” was very different than using it as a tool to accomplish a specific goal.

So, let your mind go and imagine a world where RFID tags, Wireless clouds, GPS by satellite and triangulation from radio towers, mesh networks and grid computing clusters are considered commonplace.

Shawn Gold, SVP of Marketing and Content said, “To us it’s a refrigerator, to our grandparents it was technology.” Such is the nature of progress ...

The Biggest WiFi Cloud in America

As of November 2005, the biggest WiFi cloud in the United States was centered on the city of Hermiston, Oregon. This 700-square-mile “hot spot” extends across four counties and into the state of Washington. The brainchild of Fred Ziari, CEO of EZ Wireless, the cloud is supported by many local government organizations and businesses. To cover this vast area, the network uses meshed repeaters, so it is self-healing. Local uses for the cloud include wireless surveillance cameras,

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Internet access, farm machine automation and anything else you can do with WiFi. Want to see the future? A visit to Hermiston will give you a close-up and personal view.

Wireless vs. Wired (An excerpt from *Television Disrupted: The Transition from Network to Networked TV*)

When we think of wired and wireless competition in the television business, we are usually thinking about the old broadcast model (transmitters and antennas) vs. the cable/telco/satellite television distributors (cables to and around the household). This makes perfect sense, but there is a new wireless television on the horizon and it is the enemy of all the established distribution networks.

There is a concerted effort being put forth by consumers, municipalities and commercial enterprises to create a nationwide two-way wireless network capable of transporting data using TCP/IP (Transfer Control Protocol/Internet Protocol), the language of the Internet. The goal of these organizations is to create an environment where all of your wireless devices are connected all of the time. They will use spectrum licensed from the FCC, possibly some of the old analog television spectrum being auctioned off during the analog to digital television transition.

As this battle unfolds, you are going to see fierce legal fights between all of the companies that have existing infrastructure and all of the companies and municipalities that want to obviate or disintermediate these old distribution platforms in favor of the new, cheaper, more efficient, inherently two-way wireless systems. The consumer benefits of the new wireless world will be explosive.

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What will they do with the spectrum? Other than the squatters and speculators, the people who decide to build networks will put up radio towers all over the country. They will create digital two-way wireless networks suitable for broadband Internet or any other desired wireless protocol. Some companies will create "me too" products that offer familiar products at reduced prices or with some value-added features, or we may see inexpensive wireless broadband connections over WiMax and the like. Some will use the networks for business-to-business applications like tracking packages or terrestrial positioning systems.

Others, however, will try to change the world by creating vast two-way wireless networks that are built to disintermediate the existing telephone company and cable company infrastructures. This will take billions of dollars, but it can be built in far less time than anyone can imagine. We could see wireless broadband connections with up to 60 Mbps of bandwidth (enough for simultaneous HDTV, VoIP and super-fast Internet usage) by the early part of the next decade.

This type of network would truly change everything. It would actually impact the way we live our lives. For example, in a wireless broadband, high-bandwidth city, with a mesh network overlay, you would know the location of your children by looking at the screen on your handheld device. Your news, weather and traffic media would be personalized and delivered to you with constant updates that were triggered by your movements or specific environmental, temporal or spatial needs. No matter what the business category, there is a need for inexpensive, ubiquitous two-way wireless connectivity: medical, education, automotive, telecom, media, entertainment, manufacturing, retail.

This type of network would feel more like living in an episode of Star Trek than anything else. Imagine retail packaging that not only knew when you picked it up, but knew when you put it down. The concept of check-out counters

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disappears. There is no longer a need for wireline telephones; all of your voice communication is wireless (like VoIP, only everywhere). No more cell phones, no more wired Internet connections -- every device you own can access the network all of the time. When your PDA is on, it is in sync with your desktop; when you download a piece of content, you can access it from anywhere on anything you own that can read it or play it. You can carry an electronic wallet, links to all of your medical records and every movie and song you could ever want in a wireless handheld device that is no bigger than a PDA.

This type of network would spawn industries that we cannot even conceive of. New types of aggregators, search engines, intermediaries, payment processors, and criminals -- the change will be even more profound than the industrial revolution or the space age. This will take the information age to a place no one today can understand. But it is not 10 years away.

When you add the power of utility-based grid computing to this type of super-powerful wireless mesh network, you simply change the world. Will the telephone companies and the cable companies be able to compete? Not with their current infrastructures. This type of wireless network would render their plants and equipment completely obsolete. However, it is very possible that these will be the very companies at the forefront of this communications revolution. Other obvious players are Google, Microsoft, Intel, the big electronics companies and big media.

How probable a future is this SuperNet? There are so many smart people and organizations with means and motive thinking about this that it is unlikely that anything can stop it.

Here's an excerpt of an article I wrote for mediapost.com in November 2005. It was written as a parody of the various spam email messages we all receive for a

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“better life through the Internet,” but, this is a very probable future of communication:

The WiMax Price Club

They're popping up all over America -- in backyards everywhere -- it's the latest do-it-yourself craze -- the WiMax Price Club. Want free Internet access for life? No problem. Just go to <http://www.WiMaxPriceClub.com> and order your tower kit online. When it arrives, get your building permit (if required by local zoning laws) and erect your new 80' antenna tower in your back yard or on your rooftop. Just plug in the included WiMax repeater and you'll be online in a jiffy! Imagine over 70 megabits up and down, FREE for life! Nothing else to buy; no salesman will call you. Offer void where prohibited. Your actual results may vary. Batteries not included.

This is the first mutual Internet access club. It represents the total democratization of Internet access and the total disintermediation of the established telephone and cable infrastructures. The WiMax Price Club has purchased a bunch of dark fiber from a defunct CDN and lit it up with their own hardware. The Club's central offices are conveniently located very close to your home, so your tower and repeater are all that is needed to surf free and download at will. Share the connection with your friends, you can charge a small override or just let them enjoy the fruits of your labor. Maybe they'll kick in a few bucks and help you purchase your tower and erect it. After all, free is free -- but that doesn't mean you can't make a little money! Put up your own portal software, you're the master of your 70 megabit domain and the 10 mile Area of Dominant Internet Access around your house.

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Imagine free telephones using Skype, free movies and videos using Bittorrent, free surfing for all of your WiFi enabled devices – pretty soon, free wireless VoIP handsets to replace your cell phones. This is the brave new world and nothing can stop ordinary citizens from becoming part of the whole for the greater good. Free is very pro consumer and it's time to take control of that nasty content bill. Why pay hundreds of dollars each month for cable television, land line telephones, old fashioned broadband – get connected to the only Internet that's for the people, by the people – The WiMax Price Club.

Do you think this is science fiction? It is nowhere near as far-fetched as it sounds. Yes, the new 802.16 (WiMax) specification is super exciting, unapproved and very misunderstood. But this type of technology and my hypothetical homegrown technological rebellion could easily happen. In fact, commercial versions will absolutely happen – well before 2009.

We are living in a world with several old (mostly mortgaged) infrastructures and our very high monthly bills help pay down that debt. The cable systems and telephone companies have operated for the better part of the last three decades under the belief that we had no where else to go. Now, they are fighting amongst themselves: Cable vs. Satellite, Satellite vs. Telco, Telco vs. Cable and the CE manufacturers have yet to weigh in. While these various factions duke it out, they will not be paying too much attention to Google trying to give everyone in San Francisco free Internet access or a similar business plan like the WiMax Price Club. But, we do have choices. It may not be WiMax, it may not be an existing protocol or specification, but as soon as the prices get too insane, it will be something.

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Internet access is a commodity and the downward price pressure on it is extreme. When everyone has almost free wireless broadband Internet access we are going to have an explosion of new technologies unlike any that has been seen since the beginning of the industrial age. You name the category; there is a need for free two-way wireless connectivity. Medical, Education, Automotive, Telecom, Media, Entertainment, Manufacturing, Retail, the list is practically endless. When will the WiMax Price Club become a reality? As soon as you will it to happen. All you have to do is join. Visit the website and get on the mailing list today!