

### ***Reforming Telecom Policy for the Big Broadband Era***

## **WHY IS GOVERNMENT SUBSIDIZING THE OLD NETWORKS WHEN ‘BIG BROADBAND’ CONVERGENCE IS INEVITABLE AND OPTIMAL?**

By Reed Hundt\*

### **Introduction**

All new media, taught Marshall McLuhan, are destined to subsume and extend all old media, and to use the old media as their content, much like large fish filling their stomachs with small fish. The fish metaphor belongs to me, not McLuhan, since he was rarely so dull in his imagery.

The big fish of today is Big Broadband – access to the Web at 10 to 100 megabits per second for homes and 1 to 10 gigabits per second for businesses. The small fish are broadcast, DSL, cable modem, and voice.

The questions are not whether Big Broadband will swallow the fish, and perhaps the whole ocean, but how, when and by whom will the swallowing be done? Who will create value and who will capture it? How much capital will regulation and market failures cause to be wasted in the process? Lastly, will we include all Americans in the new medium, so as to create community and greater social value? And if all Americans, rich and not rich, urban and rural, are eventually weaved into the fabric of Big Broadband, will that happen at more or less the same rate for all, or will Big Broadband be distributed like the benefits of the Big Tax Cuts of 2001 – that is, on a trickle down basis.

The answers to these questions will define not only Information and Communications Technology (“ICT”) policy, but also a major part of America’s domestic and economic policy.

### **Big Broadband: The Inevitable Convergence**

Since the beginning of convergence, dated from about 1992 (plus or minus a year), the battle to be the primary medium of at least the next decade—the one we are in now—has raged among various antipodal rivals: content vs. conduit; local vs. long distance; wireless vs. wire; data vs. voice (also known as packet vs. circuit); communications vs.

computing; network vs. edge; and copper vs. HFC (also known as telco vs. cable). Other, possibly lesser dialectics include satellite vs. terrestrial and broadcast vs. cable. Convergence describes then a clash of networks, businesses, and even cultures.

As the convergence story evolves, a synthesis emerges. It is the next generation network that can be discerned in the fog of the future. Its lineaments are 10 to 100 megabits per second to the home, 1 to 10 gigabits a second to the enterprise, IP protocols, packets of course but more edge-centric than switch-centric in terms of control, wireless home and business LANs fanning out like peacocks’ tails from the edge of the wire network, fiber fairly far to the edge, computing everywhere, software gluing the contraption together, and myriad handheld or hand-carried devices connecting all the time anywhere to the Net, the Web, the world’s devices and users.

This is what I’m calling the Big Broadband network. In my shorthand it is 10/100 at home, 1/10 at work, and wireless all around.

It is not Little Broadband. Little Broadband is the thin stream of data sold as DSL or cable modem, not amounting to much more than, if even equal to, 1 megabit per second to a home. Big Broadband is to Little Broadband as a SUV is to a motorcycle. Big Broadband can carry full motion video, download pictures of Paris or Hilton Hotels or Paris Hilton (whoever that is), and provide web page access that feels like flipping pages of a magazine.

Little Broadband can do voice over the Internet, but otherwise is painfully slow. It is no more a new medium in comparison to narrowband than, for instance, the kinescope was as to still photographs.

Given the power of technological change, the Big Broadband network surely will reach some people fairly soon. Indeed, it already exists within some

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college campuses, some corporate parks, and in parts of Seoul and Tokyo.

But Little Broadband is the concern of FCC policy. I think that's wrong-headed. Big Broadband is what we want to be focused on. It is the big fish that will swallow all the little ones.

However, Big Broadband is the common if unstated theme of two topics that are under discussion in government: namely, the so-called HDTV transition and the VOIP threat to universal service.

All of us can readily agree that in order to distribute high definition video and high quality voice the optimal physical medium is Big Broadband. Since the FCC is bent on causing both high definition television and voice to be provided to everyone in America at affordable prices, such that 95% or so take the services, then plainly the cheapest way to get that result is to send the video bits and the voice bits over the same high bandwidth network. Moreover, the Big Broadband network would have plenty of capacity left over to permit end users to obtain very high-speed access to the Internet.

So that's the result the FCC, the firms, the consumers, the country should want: a Big Broadband network that will carry high definition broadcast channels for free on the pipe instead of over the air; that will give every end user limitless voice at very low cost; and that will provide high speed Internet access at one or two orders of magnitude faster than what is commercially available today.

This network would be optimally efficient. It would be a platform for new innovative services, such as rich interactive gaming. It would greatly increase e-commerce, producing higher GDP. It would create new jobs in the United States. It would ensure broadcast penetration at nearly 100 percent, local voice penetration at nearly 100 percent, and push Internet access at least to 90 if not 100 percent.

The key task of the FCC should be to unwrite old rules and write a few new rules so as to create clear incentives for existing network operators and service providers to build a Big Broadband network.

## Regulatory Drag on Big Broadband

Regulation negatively influences Big Broadband business plans. Currently federal and state regulation causes consumers and taxpayers to pay staggering sums to sustain old networks when much less money could pay for the same services plus additional services and also for the cost of building Big Broadband to every home and business. Because of regulation and market failures, the demand that should fund Big Broadband does not create a supply of Big Broadband.

A particularly discouraging example of the negative effect regulators are having on Big Broadband was the FCC's December 1, 2003 forum on Voice over the Internet (VOIP). The chair, and many others, talked about trying to balance regulation and deregulation. But the invention of VOIP—voice over a high speed Internet connection—actually means that state and federal regulations that subsidize and guarantee affordable local telephone service should be junked. Instead, if state and federal

authorities want to assure that everyone can buy voice service, they should write rules to subsidize Big Broadband connections, through which voice can be provided at a fraction of the cost of maintaining today's legacy networks.

Instead, based on what I heard from the December 1, 2003 forum, many heads nodded in collective agreement that VOIP might have to be burdened with such out-of-date regulations as access charges in order to generate money that could go to sustaining the soon-to-be-out-of-date legacy voice network. And I

did not hear that anyone said what should be said: let governments describe how they can help firms move all voice traffic on to new Big Broadband networks that reach all Americans, while maintaining or increasing shareholder value and network reliability.

The current VOIP conversation at the FCC and in state commissions is as if government responded to Henry Ford's new invention of the automobile by discouraging the construction of roads, and instead taxing cars in order to subsidize canals and railroads. As a former government official I can only say: We can do better.

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## Recycle Current Revenue Streams

How should government be working on what should be the convergence of Big Broadband with existing voice, broadcast, and Internet access?

Let's start with the math. It will show that Big Broadband does not require a new subsidy. The taxpayers and consumers do not need to pay more than what they now pay for network services. They will be able to pay much less. Governments and firms just have to change both regulation and market structures in order to make way for the new Big Broadband network.

Say every household today pays \$40 a month for voice. That's conservative. We are all conservatives now. That totals \$4 billion a month, or roughly \$250 billion over five years. I am giving five years for firms -- they can be today's telephone or cable businesses -- to build a Big Broadband network. That \$250 billion can help pay for VOIP over Big Broadband and of course for the underlying physical network itself.

Next, thanks to our FCC, the taxpayer has given about \$70 billion of free spectrum to broadcasters and the consumer has been ordered to pay about \$20 billion for over-the-air digital tuners for 200 million televisions over roughly five years. That's \$90 billion out-of-pocket for taxpayers and consumers. It is not too late to redirect that money toward paying for the Big Broadband network. On that network broadcasters can get free high definition TV carriage. They have that on analog cable; they are inside satellite packages. Why not give them free access to the Big Broadband network? That should make broadcasters and TV households happy. In return we can get back the high definition spectrum, sell it, and use the proceeds to help pay for Big Broadband to high-cost rural and poor homes. And we could even repeal what I call the "tuner tax." We are all tax-cutters in Washington now.

We have still more money to deploy. On average over the next five years, about 60 million households will pay about \$25 a month for Little Broadband—the low-speed Internet access that we are being offered instead of Big Broadband. The retail price

may be higher and the penetration rate may be higher, but we are all conservatives now. So that totals over five years about \$90 billion. All that can pay for Big Broadband, which subsumes Little Broadband.

That totals \$410 billion in money that as of now will be dedicated to supporting a voice network from the 19th century, a broadcast business from the mid 20th century, and broadband access technologies from at least a decade ago. (That is even after I repealed the "tuner tax.")

For probably one-fourth that sum, firms could build fiber to the fingertips of everyone in America. Governments, and firms, need only to figure out how to let the demand be aggregated in pursuit of Big Broadband and how suppliers can cooperate to meet the demand.

Please notice customers would still have to pay for cable channels, advanced communications services, and Internet applications over the big Broadband network, but that is what we want: value added services that grow the economy, add jobs and increase productivity.

The high calling and critical task of federal and state government, then, is how to unwrite rules or write rules -- in short how to create the new system -- that would permit end users to pay for what they should be able to get for their money: a Big Broadband network that supplies all the voice, video and Net access anyone could want. At the same time, the new system would free customers from the necessity and obligation of paying to underwrite the maintenance of

the old networks that could so readily be subsumed by the new network.

## Politics as Usual

You are all experienced Washington people. You know the math is close enough for government work and the logic is sensible enough for policy. So of course you are saying: this can never happen.

Why not? If Republicans can run huge deficits and Democrats are budget balancers; if Republicans are internationalist and Democrats are isolationists; if Republicans are spending trillions on new Medicare

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benefits and Democrats are voting against the law – then certainly nothing is impossible in the new Washington.

And I know you are troubled by the notion that our current system will make customers spend \$400 billion on yesterday's networks when they could spend much less to bring America into the forefront of the next generation networking of the world. You are uneasy about letting the Koreans and Chinese lead the world in the next iteration of the Internet, not because their people are smarter but because their governments are. You don't welcome the vision of America exporting jobs to Asia to help them work out the solutions to the problems of advanced networks.

I've proved that more than adequate demand exists to pay for Big Broadband. Yet many market and regulatory failures stand in the way of the deployment of Big Broadband. These problems are the reasons our federal and state governments need to act.

### Five Regulatory Failures

The first problem is that the current two-firm market for Little Broadband encourages both telephony and cable to build Little Broadband to every household. But that means the total expense is twice what it needs to be. That in fact discourages both firms building even Little Broadband to every household.

The second problem stems from game theory. The Big Broadband network of course can provide voice, video, and data. This is referred to as the "triple play." As in baseball, the side that pulls it off makes the other side out. In other words, if any firm produces such a triple play and is economically viable, then it might be reasonably supposed that this firm will dominate communications, technology, and even media markets. The question then is whether a firm that makes its living in voice and one that makes it living in video are inclined to go for the triple play. Nash equilibriums are what lawyers like me are taught by economists to describe the offsetting motives that produce a collective unwillingness to proceed into fight-to-the-death competition. In short, perhaps the two-firm Little Broadband market lacks incentives for anyone to build the Big Broadband network. In

the two-firm market, then, each firm may well be very cautious in trying for the triple play, given the fact that the price of defeat may be elimination.

The third problem is that government is wrongly wedded to providing broadcast over the air. Big Broadband and Wi-Fi dispense with the technology of transmitting stations. It's time for government to 'get it' – in Valley parlance – and to move video to the pipe. Nick Negroponte called it the 'great switch' more than a decade ago, and it's time to get on with it.

A fourth problem is that demand for fixed-line local voice often cannot find many different sellers: the market is not perfectly competitive. Moreover, until very recently that demand could not obtain voice over the Internet. Now services like Vonage and Skype are meeting the demand for voice over the Internet, and most cable companies, as well as at least some telephone companies, do or soon will offer voice over the Internet. All the new demand for voice over the Internet should be allowed to help pay for Big Broadband. Instead state and federal

government seems concerned to slow this burgeoning VOIP market. What should happen is that government should permit VOIP demand to stimulate broadband.

The fifth problem is that our existing universal service schemes subsidize local voice for rural and poor populations. Instead they should subsidize Big Broadband for those and all other populations that need a little economic help in getting on-line, while getting their voice on the same line. A policy for bringing all Americans into the experience of using a computer on the Web can

generate economic and social benefits, as well as provide a significant stimulus to the economy. We might even see a rise in general happiness, since surveys show that those on the Internet are even statistically more likely to be happy than those off the Internet.

If as many were online as those who watch satellite and cable television – now nearly 90% of homes – many social benefits could be distributed and many social needs served by on-line communication. Political associations could be created more readily, thus increasing participation in democracy. Health care and education could more efficiently be distributed to target populations that are otherwise

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costly to reach, such as shut-ins, workers, or those geographically distant from medical centers and schools.

But even if you do not agree that all should be on-line for various social reasons, surely you agree that state and federal governments are likely to maintain the policies that make local voice so affordable that everyone buys it? Therefore, why object if governments became wise enough to merge the so-called universal voice policy with a universal Big Broadband policy? If we have to spend taxpayer and consumer money to all sorts of new things -- prescription drugs and pipelines, the Iraqi coast guard and a Hooters in Louisiana -- can't we at least get a bonus of Big Broadband for the same money we are certain to spend anyhow? That way we can still get yesterday's services but over tomorrow's network.

### Ways and Means: Three Models

Since this is Washington, it would be unusual not to elevate means over ends, at least at the end of the talk.

At least three possible models for implementing universal Big Broadband are worth consideration; perhaps others would emerge from the Notice of Inquiry I'd like the FCC to issue.

First, government could grant to every consumer an assignable tax credit. As I said, the funds could come from the voice or broadcast subsidy programs that already exist; or if those could be eliminated, the funds could come from the general treasury revenues that are being tapped for so many other technology projects in the current budget. Consumers would grant that credit to any firm that provided the requisite minimum 10 to 100 megabits per second of access. Cable, telephony, and any other entrant, such as wireless, would compete for the credit. When a firm obtained enough credits, it could have adequate revenue guaranteed to cover the cost of a Big Broadband network.

The broadband provider could charge whatever the market would bear. However, it would not obtain the credit unless it won the customer. The credit would equal the difference between willingness to pay and cost -- not an easy calculation but one that can be made by model and then adjusted by experience.

A second proposal would be to have state utility commissions designate a preferred Big Broadband provider. This firm would be obligated to provide a

### Big Broadband Advocacy Organizations

Carnegie-Mellon University's 100 Mbps to 100 Million Households Project, [www.100x100network.org](http://www.100x100network.org). A coalition of academic network engineers.  
Corporation for Education Network Initiatives in California (CENIC), [www.cenic.org](http://www.cenic.org). A coalition of California higher education and information technology organizations.  
Computer Systems Policy Project (CSPP), [www.cspp.org](http://www.cspp.org). A coalition of the largest U.S. computer system manufacturers such as HP, IBM, Dell, and Apple.  
Cornell University's Advanced Fiber Networks Institute, (AFN Institute), [afn.johnson.cornell.edu](http://afn.johnson.cornell.edu). An academic center.  
Internet2, [www.internet2.edu](http://www.internet2.edu). A coalition of about 200 universities.  
New America Foundation, [www.spectrumpolicy.org](http://www.spectrumpolicy.org). A Washington, DC thinktank.  
Technet, [www.Technet.org](http://www.Technet.org). A coalition of about 150 high-tech CEOs.

physical link of at least ten megabits per second to every household in a designated geographic area. Any technically qualified solution would be acceptable, so that wireless and wire-based alternatives could compete for the state designation. The preferred broadband firm would then auction its physical capacity to service providers.

A third proposal is for government to order all existing universal service programs for voice to be dedicated to providing VOIP as opposed to existing voice over circuit. As part of that, cable and telephony could, if they chose, merge their local access networks, thus saving each of them substantial costs. As a condition they would keep their services separate and competitive, dividing the physical infrastructure from the provision of service. This model resembles the exemption from the antitrust laws passed by Congress to permit local newspapers to share printing facilities in order to obtain economies of scale in distribution while continuing to compete in the content business.

A final consideration is that wireless broadband access may be brought to the market at a price and with a functionality that obviates the need for a wire-based Big Broadband network. If so, then the current HDTV plan is monumentally foolish; the circuit voice network is under heavier siege than we know; and VOIP still should not be lassoed into the current regulatory regime. Instead, government should make any and all subsidies -- I insist either none or hardly any will be necessary -- available both to wireless and wire-based Big Broadband providers, and let the better network prevail.

## A Platform for the Future

A decade ago, John Malone, perhaps the single most important builder of the American cable networks, predicted that three inventions—the microprocessor, digitization, and fiber optics—would revolutionize the media and communications industries, and drive their convergence into a single market. He foresaw a 500-channel universe. And in late 1993, to capture the value of this triple revolution of technology, he sought to merge his cable company, TCI, with the phone company, Bell Atlantic. The two together promised to build an “information highway” to at least forty percent of all homes in the United States. This highway would carry all voice and all video channels to each home. To support this big pipe, the two huge companies would raise the capital necessary to build fiber networks to homes. The merger plans collapsed in 1994.

Malone did not close his deal. He did not predict the Internet. He didn’t predict that the great content cornucopia would comprise not his ballyhooed five hundred channels so much as the countless pages on the Web.

Yet Malone was right to identify that the access network is key to innovation and growth in ICT. With Little Broadband, the access bottleneck will be exasperating users for years to come. Current microprocessors are able to display in fractions of seconds movies or videoconferences that the fiber can carry at the speed of light from anywhere in the world. And at the screens of these information-hungry computers sit a hundred million people who wait impatiently for still pictures and words to resolve themselves slowly into recognizable form. Rather than waiting hours to download a film, the consumer drives to Blockbuster for a rental. So we have a problem of complementary products: no shoestrings, plenty of shoes; no access network, plenty of services that would like to get across that network. We have skimpy connection and plenty of computing potential that yearns for the big broadband connection.

Many chapters of regulatory history counsel us against government policies that promote specific technologies. However, a high-capacity physical link is not so much a technology solution as a platform for innovation and a basis for service level competition. It should be a basis for a future of technology discovery, and the creation of a new common medium that can bind us all together.

## A Big Broadband Reading List

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