

Broadband Connectivity as an Engine Of Economic Growth

Testimony before City Council of New York
Select Committee on Technology in Government and the
Subcommittee on Small Business, Retail, and Emerging Industries

Joint Hearing on Municipal Broadband Policy and its Relationship to Small Business and Community-Based Development

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We live in an increasingly interconnected and networked world. And therefore broadband connectivity is no longer optional for most businesses. It is an essential component to competitive efficiency, whether they use electronic ordering systems; intranets that help coordinate a dispersed field sales force; back-up remote data storage; or just a website for global, anytime communication with their customers. Information technology is a critical tool for business. And just like the choices in vehicles or personnel or wholesale providers, different businesses will have vastly different connectivity needs. They must address such questions as:

- How much bandwidth do we need?
- Do we send more than we receive?
- Do we need to host a server for remote access – by our people? by our suppliers?
- What security requirements for our network?
- Can our systems and connectivity handle are our growth plans?

All broadband is not created equal.

For these choices to be available to small and mid-size businesses, it requires a robust competitive environment. Unfortunately, this is now threatened by the FCC, whose chairman, Michael Powell, is about to change the rules and create a legal duopoly in broadband Internet access. This will mean competitive DSL providers and independent ISPs would no longer be able to use the telecommunications infrastructure to provide broadband Internet access. This is as unfair as it is counterproductive.

Increasingly, outrage is growing at this pending communications disaster. Just last Friday, a NY Times Op-Ed by the economist Paul Krugman:

Last March the F.C.C. used linguistic trickery — defining cable Internet access as an “information service” rather than as telecommunications — to exempt cable companies from the requirement to act as common carriers. The commission will probably make a similar ruling on DSL service, which runs over lines owned by your local phone company. The result will be a system in which most families and businesses will have no more choice about how to reach cyberspace than a typical 19th-century farmer had about which railroad would carry his grain¹.

¹ Digital Robber Barons? By Paul Krugman; NY Times Op-Ed, December 6th, 2002; page A35. available at: <http://www.nytimes.com/2002/12/06/opinion/06KRUG.html>

If not for court imposed mandates, we'd probably still be dialing black phones owned by the phone company.

Verizon, first as NY Telephone subsidiary of AT&T (Ma Bell), then as NYNEX, then as Bell Atlantic, was given 100 years of monopoly advantages including free, unlimited rights of way. These public goods were given in exchange for regulated monopoly. Verizon now finds such obligations "unfair" -- but essentially they seek to privatize only the benefits.

How could a competitor possibly overcome such entrenched advantages? Simply, they cannot. The choices are open access by compliance with the 96 Telecom Act unbundling provisions (with stronger enforcement by the FCC) or structural separation of the telecom infrastructure from the retail and services portion of Verizon.

Two things have obscured these issues regarding broadband: most media coverage has focused on availability issues and the cable vs. telco race for residential broadband.

However, the business community especially small-medium size businesses have leveraged high-speed network connectivity in myriad creative ways. Here are just a few examples, from Bway.net's client base:

- Small law firm -- uses SDSL for Internet access and shared document server with VPN (virtual private network) for secure remote file access.
- Photo stock image house -- On a 768 kbps SDSL circuit, hosts a file server which functions as a self-service e-commerce business.
- NY branch office of European firm -- uses SDSL for videoconferencing over Internet Protocol (IP).
- Home office -- telecommuter, uses ADSL with a static IP address to reach his office network securely.

These are just a representative sample of hundreds of our small business customers. Many of these industrial strength applications require *symmetric* connections because the upstream bandwidth of the connection hosting a server is experienced as the downstream bandwidth by the remote users accessing that server.

As far as I know, these capabilities have not and still are not available from AOL/TimeWarner or Verizon.

As an independent ISP, Bway.net provides an enhanced level of customer support as well as a full compliment of Internet services. Static IP addresses, VPN, firewalls, email, domain hosting, DNS, whatever is needed, we attempt to provide our customers. Bway.net is the top-rated ISP in NYC by BroadbandReports.com, the independent rating service.

Bway.net also is a proud member of NYCWireless.org – we allow our customers to share their DSL connections. Some run private networks, others share by offering a free public node. As long as they are our customers, we allow them to use their connections as they choose.

In contrast, Verizon has limited the connectivity of its customers by using only shared-line infrastructure, PPPoE protocol requiring user login like dialup, and even dictating the return address of outbound emails to Verizon-owned addresses. Time Warner has limited their customers' upstream video transmissions and forbids wireless bandwidth sharing.

The Small Business Administration, citing TeleTruth's research and filing², recognized that these rule changes could severely affect ISPs like Bway.net and in an ex-parte filing on August 27, 2002, urged the FCC to examine the impact on ISPs before issuing an edict – as required by The Regulatory Flexibility Act:

2. Defining Wireline Broadband Internet Access Services as Information Services Will Heavily Burden Small ISPs.

After reviewing the Commission's proposed rule, the IRFA and comments, Advocacy is concerned the Commission has understated the impact on small ISPs of its tentative conclusion classifying broadband access service as an information service. Classifying broadband access service as an information service would remove the requirements set forth in the Commission's Computer II(13) and Computer III(14) rulemakings that provide carriage to ISPs.(15) Such an action will severely hamper the ability of small ISPs to provide broadband service, stifling competition and slowing down deployment. Although Advocacy shares the Commission's commitment to deregulation to bolster competition and spur economic growth, in this instance, complete deregulation will create impenetrable barriers to entry, eliminating competition from small businesses and removing consumer choice³.

² All documents available at <http://www.teletruth.org/FCCbroadband.html>

³ RE: Ex Parte Presentation in a Non-Restricted Proceeding
Initial Regulatory Flexibility Analysis for Appropriate Framework for Broadband Access to the Internet over Wireline Facilities (CC Dkt. No. 02-33) ; August 27, 2002.
Available at: http://www.sba.gov/advo/laws/comments/fcc02_0827.html

As I mentioned before, *all broadband is not equal*. Functionality can be constrained by physical properties of the network or by the protocols used by the provider. Chairman Powell has argued that “inter-modal” competition between the cable company and local phone company should be sufficient. This premise is completely false for business connectivity!

Economic growth through innovation will be severely harmed by monopoly or duopoly control of our communications infrastructure. It is also profoundly unfair to reward these dominant companies for holding critical public infrastructure hostage.

The momentum and urgency among technology companies is mounting as they fear the crushing blow that monopoly or duopoly control of broadband means for their future growth:

A broad range of consumer groups, trade associations and powerful computer and Internet companies including Microsoft (Quote, Company Info), Apple (Quote, Company Info), eBay (Quote, Company Info) and Yahoo! (Quote, Company Info) are joining forces to petition the Federal Communications Commission (FCC) to “protect broadband users’ ability to communicate across the Internet without interference that own broadband communications networks.”

In a letter to the FCC Tuesday, the group, calling itself the Coalition of Broadband Users and Innovators, outlined its concerns that broadband network operators such as cable and telephone companies will implement restrictions designed to block or impair access to Internet content, services or devices on their networks⁴.

Among other signers included major trade associations: Information Technology Association Of America (ITAA), Consumer Electronics Association, National Association of Manufacturers, Association for Local Telecommunications Services (ALTs), and CompTel⁵.

Mr. Powell is about to gut the unbundling provisions of the '96 Telecom Act, which would create a duopoly for broadband Internet access. And so now we see growing outrage because this rule change would have far-reaching negative impact on economic growth by restricting innovation. The only safeguard to ensure high-speed Internet

⁴ Microsoft, eBay Join Consumers in FCC Protest By Roy Mark; atnewyork.com; November 19, 2002:

<http://www.atnewyork.com/news/article.php/1503371>

⁵ Filing available at: <http://www.mediaaccess.org/programs/broadband/CBUfinalletter.pdf>

Press release available at: <http://www.mediaaccess.org/programs/broadband/Broadbandcoalitionfinalpress.pdf>

connectivity as an innovation engine for business is to guarantee that there is genuine competition by assuring equal access to the infrastructure.

At a roundtable on Thursday, October 31, 2002 hosted by The Office of Advocacy, U.S. Small Business Administration in Washington, DC many of these points were made by me, as well as by many other ISPs around the country⁶.

And so today I strongly urge everyone who recognizes this as a threat to our economic growth – NY City Council members, our representatives in Congress and business customers as well – please add your voices to stop FCC Chairman Powell before he disconnects the Internet from independent service providers. Please help prevent Powell from killing our broadband future.

Principles for long-term future broadband development

We must design and promote a system that ensures open and equal access to infrastructure by all competitors. As we look towards a long range broader-band future, it is clear to most that this will mean fiber optic networks.

In this endeavor, NYC might do well to emulate some rural communities, who out of necessity have grappled with these issues. Palo Alto, CA; Klamath County, Oregon and others have leveraged municipal rights of way to create an “information utility” – a fair system where any service provider can interconnect to provide Internet access and services. I am not an expert in these schemes but I recommend you reach out to Jeff Ritter of Technomethods⁷ who has developed these systems.

We cannot predict what mind-boggling new capabilities and innovative applications will emerge using broadband networks. But we can be certain that they will.

My very personal and admittedly idiosyncratic point of view is that the most compelling uses will make far greater use of upstream bandwidth as the Internet embraces the

⁶ Re: Notice of Ex parte Presentation in a Permit but Disclose Proceeding
In re Wireline Broadband Deployment (CC Dkt. No. 02-33); November 1, 2002
Office of Advocacy, U.S. Small Business Administration; 409 Third Street, SW; Washington, DC 20416
⁷ Jeff Ritter; Telecommunications Planning and Development;
Technomethods Corporation; 2105 Auburn Street; Klamath Falls, OR 97601
Phone: 541-273-6820
Email: info@technomethods.com
Web: <http://www.technomethods.com>

unique two-way capability of this medium. We can already see the power of this upstream participation in everything from email to ebay to Napster.

For example, the same file-sharing peer-to-peer activity so decried by the Recording Industry Association of America is also now seen as a tool of liberation by music creators, (including Joni Mitchell, Janis Ian and Courtney Love⁸) allowing them unprecedented opportunity to distribute their music globally, without a record company. No more pressing, excess inventory or payola for radio programmers – for do-it-yourself music creators, this is an entire new medium enabled by broadband access!

Another example? Videoconferencing over IP is freed from the tyranny of per-minute charges under ISDN regime. It is already being used for remote monitoring, from security cams to elderly relatives.

The dot.com bubble, which over-hyped Web-based businesses, of course had to collapse when reality re-emerged -- but it will be seen by history as of minor importance. Freed of the bandwidth constraints of our current infrastructure, fiber connectivity will quickly make Web pages an anachronism and offer unimaginable new business possibilities.

The Internet was built on open access – it is the essential that we embrace these principles to reach the broadband potential that it offers us.

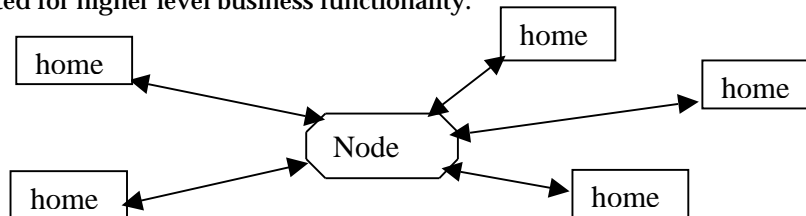
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⁸ Courtney Love Does the Math at: <http://www.salon.com/tech/feature/2000/06/14/love/>

Appendix A: Infrastructure Explained

Without getting too technical, we can try to explain how network infrastructure and protocols vary and can limit capabilities.

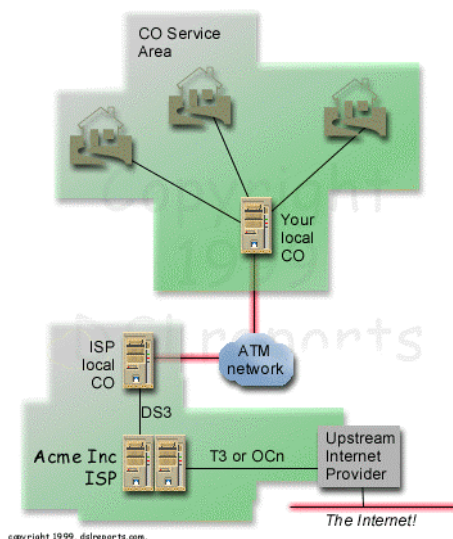
The cable infrastructure is built on a star topology, since it was originally designed to distribute TV programs. Consequently, it is a severely asymmetric and bandwidth is shared at **nodes** (approximately 500 homes). These nodes can be overwhelmed by simultaneous usage. There are also security concerns inherent in this shared environment. It is adequate for casual Web surfing – but limited for higher level business functionality.



The telecommunications infrastructure is different than cable since each line is a distinct circuit. However DSL, the dominant broadband technology over telephone lines, has many different flavors, which primarily depends on the equipment (called DSLAMs) being used. This equipment must be co-located in the Central Office (CO) where the phone lines terminate.

ADSL (asymmetric DSL) typically has much greater download speed than upload because it is piggybacked on a dial-tone phone line. Verizon has chosen to offer exclusively ADSL on a “shared-line.” In performance it is similarly asymmetric as cable modem – and so also adequate for most casual residential customers today.

Symmetric DSL, which offers sending or “upload” speeds equal to download speeds, requires a stand-alone loop – with no dial-tone. It is however, much more stable as well as the greater upstream bandwidth and therefore much more capable for business applications where reliability and upstream bandwidth matter. In nearly 4 years since the US broadband rollout began, only competitive LECs like Covad have offered SDSL.



its internet provider⁹.

This . . . shows you how your home is hooked up to the internet via DSL. CO stands for central office. There are over 30000 central offices in the US, each responsible for phone service (and now potentially, DSL service) for a small region indicated here by the green area. These regions are not as you might expect, circles drawn around a CO office on a map, but follow property street or county boundaries, so tend to be quite straight-sided.

The blue cloud is network interconnecting many different locations (such multi-connected networks are always represented as clouds in network diagrams), this cloud may be entirely Telco owned or run, or could be owned by a CLEC, or a combination of both. It is not, however, the Internet.

The internet starts at the ISP, and beyond the ISP,

⁹ Illustration and text from <http://www.dslreports.com/information/kb/DSL-1/pictures>