

A Game Developer's Guide to Broadband Issues

Prepared for the 2007 Online Game Developers Conference

Steve Augustino, Partner

Washington Harbour
3050 K Street, NW
Suite 400
Washington, DC 20007
tel: 202-342-8400
direct dial: 202-342-8612
fax: 202-342-8451
SAugustino@KelleyDrye.com
<http://www.kelleydrye.com>

KELLEY
DRYE

A GAME DEVELOPER'S GUIDE TO BROADBAND

Introduction

Not long ago, most computer games were solitary pursuits – generally involving pitting the player's intelligence or reaction time against that of computer generated obstacles. Today, online gaming is one of the fastest growing segments of the game industry, pitting human player against human player, or allowing them to team up tackle new computer-generated challenges. Real time communication capabilities such as Voice over Internet Protocol (VoIP), chat, and messaging enhance the social networking aspects of games, and help build loyalty and maintain subscriptions. As these networking and communications features become more integral to the gaming experience, the nature and capabilities of the network upon which the games run will become increasingly important to the gaming industry.



1982's *Pole Position* by Namco pits a lone driver against computer racers.

The single largest factor in the growth of online gaming has been the explosion of broadband Internet access. However, even as game developers take advantage of the increase in network speed available to gaming consumers, developers need to be aware that the availability of access to the increased network speed, or to the network at all, remains contingent upon the policies of those who own and operate the network. Technological convergence created by increased broadband access allows network operators to affect previously disparate media types – text, pictures, video, radio, and games all now travel through the same “pipes” in order to reach end users.¹



2006's *Need for Speed* by Electronic Arts allows users to race each other online through a simulated city.

This paper will discuss the current trends in broadband deployment and in U.S. broadband policy, particularly as they apply to online gaming. It will also address the importance of federal policy issues on network deployment and network owner behavior. Finally, the paper will provide a look ahead to other alternative types of broadband access not yet prevalent, but which may come to challenge the telephone and cable TV networks of today and discuss ways in which gaming companies can prepare to capitalize on those opportunities.

¹ William D. Rahm, *Watching over the Web: A Substantive Equality Regime for Broadband Applications*, 24 YALE J. ON REG. 1, 4 (2007).

Background

A Brief History of Broadband Regulation in the United States

The leading broadband technologies, cable modem service and digital subscriber line technology (DSL), evolved out of preexisting services – cable television and local wireline telephone communication. These pre-existing services were generally considered classic examples of natural monopolies. A natural monopoly exists if a single firm can supply the entire market at a lower cost than two or more firms.² Here, cable and telephone service each were considered a natural monopoly because of the high expense of building a duplicate network – competitors were unlikely to enter a field with such high sunk costs and such wide geographical distribution of capital.³ As a result, both cable and incumbent local telephone networks were deployed in environments where the provider was a statutory or de facto monopoly service provider. This allowed each to deploy a network with universal or near-universal reach within a particular geographic area.

Because of their preexisting networks, when cable and telecommunications providers began offering broadband services, they did so from a strong competitive position relative to other technologies. Cable and incumbent telco providers began service with an existing infrastructure (*i.e.*, cable and telephone companies already have wires connecting to almost every house) and the ability to market to their existing customer base. Unsurprisingly, these two technologies dominate the market for broadband, representing 92% of all broadband subscribers nationally.⁴

Broadband regulation traces back, ironically, to the deregulation of the telecommunications market by Congress in 1996. In the Telecommunications Act of 1996, Congress sought to dismantle the exclusive local telephone exchange franchises that dominated the market after the AT&T divestiture in the 1980s. In most respects, the 1996 Act chose to create new rules designed to foster the growth of competitive alternatives and to allow the gradual deregulation of local markets over time.⁵

Title II of the 1996 Act sought to create a more competitive telecommunications market by requiring that incumbent telephone companies offering “telecommunications services” over their own wires to open their facilities to competitors.⁶ This obligation was interpreted to apply to all telecommunications services and facilities offered by the incumbent telephone company, including advanced services used for data or high speed connections to customers. As a result, incumbent telephone company facilities used for digital subscriber line services were regulated as telecommunications facilities. The hallmark of telecommunications regulation is the obligation of a

² Rahm, 24 YALE J. ON REG. at 9.

³ Gerald R. Faulhaber, *Wireless Telecommunications: Spectrum as a Critical Resource*, 79 S. CAL. L. REV. 537, 540 (2005-2006).

⁴ FCC, *High Speed Services for Internet Access: Status as of June 30, 2006*, at Table 2 (January 2007) (reporting services with at least 200 kbps transmission speeds in both directions).

⁵ Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. ON REG. 55,

⁶ 47 U.S.C. § 153(43).

service provider to offer its services on a just, reasonable and non-discriminatory basis.⁷ Shortly after the 1996 Act, therefore, incumbent telephone companies were required to make DSL (and other advanced technologies) available to competitors on non-discriminatory terms. The incumbents, not surprisingly, resisted these duties and sought to limit or eventually eliminate their obligations to share facilities for advanced services.⁸

By contrast, this regulatory framework never applied to cable operators. Cable operators are regulated as video service providers, not as common carrier utilities.⁹ The different regulatory treatment did not raise significant concerns when the services provided by telecommunications and cable companies did not compete. However, as cable and phone companies began to offer telephone, video, and broadband service to customers through new technologies, fairly applying past regulatory distinctions to the new technologies became an intractable problem for regulators.

Federal Communications Commission (FCC) Preemptive Moves to Deregulate Broadband Internet Access Services

In March 2002, the FCC took up the issue of classifying cable modem services for the purposes of regulation.¹⁰ Prior to this ruling, the FCC had not definitively addressed the regulation of Internet access services. In a 1998 Report to Congress, the Commission stated that entities who offered transmission capacity to third party Internet access providers were offering “telecommunications services” under the 1996 Act definitions.¹¹ It further noted that where an Internet service provider owns transmission facilities and engages in data transport in order to provide Internet access services, such facilities were treated as unregulated services. But, the Commission stated that this treatment may need to be revisited in the future in order to further universal service and other federal policy goals.

In the *Cable Ruling*, the FCC addressed calls that cable companies should be required to open their facilities to competitors (*i.e.*, cable companies would be required to sell bandwidth on their network to other companies who would then compete against the cable companies for Internet access customers). However, the FCC refused to apply telecommunications rules to the transmission element of cable modem services, instead deciding that the Internet access service offered by cable companies is a “single service” – broadband Internet, and it is “merely incidental” that the service is

⁷ *Id.* §§ 201, 202.

⁸ Although the issue is beyond the topic of this paper, 2003 changes to the FCC’s rules largely granted the incumbents’ desire to eliminate their sharing obligations with respect to broadband facilities.

⁹ 47 U.S.C. § 522(4) (defining cable service); *see also* 47 U.S.C. § 541(c) (cable companies not subject to common carrier regulation by virtue of providing a cable service).

¹⁰ *In re Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities; Internet Over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, Declaratory Ruling and Notice of Proposed Rulemaking*, 17 F.C.C.R. 4798 (Mar. 14, 2002). [hereinafter *Cable Ruling*]

¹¹ *See In re Federal-State joint Board on Universal Service, Report to Congress*, 13 F.C.C.R. 11501, ¶ 15, 55, 69 (Apr. 10, 1998)

transmitted to customers over the cable company's own lines.¹² By emphasizing the Internet features of the cable company and ignoring how the cable companies delivered the service, the FCC was able to rule that the Internet services were identical to those offered by non-facilities based ISPs, and therefore, should be categorized as an "information service" not subject to Title II open access requirements.¹³

This decision by the FCC was challenged in court. After litigation in lower courts, the Supreme Court eventually deferred to the FCC in classifying the cable operator's Internet service offerings.¹⁴ In *Brand X*, the Court found that the FCC had authority to reverse its own prior interpretation of the Telecommunications Act of 1996, and upheld the Commission's reclassification of cable's Internet service offering as an "information service."¹⁵ Notably, the Court did not rule that the service must be unregulated, only that the FCC could classify the service as unregulated if it choose to do so. *Brand X* allows the FCC the option to choose a different classification in the future.

Less than a month after the Supreme Court handed down the *Brand X* decision, the FCC also issued a ruling placing wireline broadband Internet access providers¹⁶ outside of the Title II common-carrier regulations.¹⁷ This ruling swept away legacy telecom regulations that had applied to the incumbent telephone companies, and permitted those companies to offer Internet access services pursuant to individualized negotiations with partners and wholesale customers. In doing so, the Commission cited its "goal of developing a consistent regulatory framework across platforms by regulating like services in a similar functional manner."¹⁸ Over the next year, the FCC released similar orders classifying broadband internet access offered through Broadband over Power Line (BPL) and over wireless spectrum as information services. As a result, all bundled Internet access services are free of telecommunications obligations, notably the obligation to provide service on just and reasonable terms and to offer services to all customers on a non-discriminatory basis.

¹² *Hedge* at 437; *Cable Ruling* ¶ 38.

¹³ *Id.* at 438.

¹⁴ *National Cable & Telecommunications Ass'n v. Brand X*, 125 S.Ct. 2688 (2005).

¹⁵ Although touched on only briefly here, the *Brand X* decision is one of the landmark telecommunication decisions of the decade. For an excellent layman's article on the case, see *Marguerite Reardon, FAQ: What is Brand X Really About?*, ZDNet News available at http://news.zdnet.com/2100-6005_22-5764187.html.

¹⁶ "Wireline broadband internet access providers" is a term of art for those offering DSL service over traditional telephone wires. It also includes Internet broadband delivered over other wire communications technologies, including fiber to the home technology.

¹⁷ *In re* In the Matters of Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. § 160(c) with Regard to Broadband Services Provided Via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided Via Fiber to the Premises; Consumer Protection in the Broadband Era, *Report and Order and Notice of Proposed Rule Making*, FCC 05-150 (rel. Sep. 23, 2005).

¹⁸ *Id.* ¶ 1.

Ultimately, the broadband classification rulings make clear that the Commission views the best way to establish competition in the broadband market is to establish competition among the *networks* offering broadband service, rather than the *companies* offering broadband service. This stands in contrast to the way competition developed in the long distance market, where mandatory resale obligations and access to high-volume contracts enabled competitors to build large customer bases before deploying bypass long distance networks. It also contrasts with the 1996 Act's approach to competition in the local telephone exchange market, where the Commission has relied on interconnection requirements to allow smaller companies without extensive networks to offer service over the pre-existing network of the large local carriers. The broadband classification rulings gave significant power to network owners and set the stage for the network neutrality debate.

"Net Neutrality" and Gaming

Recent Skirmishes Over Net Neutrality

The fight over "net neutrality" has gained intense media attention during the last two years following comments by industry leaders and the reaction of Internet-centric companies such as Google and Yahoo!. Net neutrality can most easily be defined as a networking principle that does not favor one application (*e.g.*, VoIP, video, web browsing, gaming) or one content producer (*e.g.*, Yahoo!, YouTube, or Electronic Arts) over another application or content producer.¹⁹ For the most part, the Internet has traditionally functioned as a "neutral network," treating all information equally (regardless of its nature or its source) by passing the data through its wires on a "best effort" basis. Simply put, this means that each router in the network passes all traffic toward its destination as quickly as it can. If the network slowed down because of excessive traffic or technical failure, all traffic would be affected equally. If a tiered network were established in the future, certain types of traffic would be prioritized over others in order to ensure speedy transmission, likely in exchange for a fee from the content providers.

In September 2005, in conjunction with its release of the *DSL Ruling*,²⁰ the FCC released a Policy Statement on network neutrality that was designed to "ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers."²¹

¹⁹ The term "net neutrality" was popularized by Tim Wu, who has published numerous papers on the topic. See Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. on Telecomm. & High Tech. L. 141 (2003); Tim Wu, *The Broadband Debate, A User's Guide*, 3 J. on Telecomm. & High. Tech. L. 69 (2004-2005); Tim Wu, *Wireless Net Neutrality: Cellular Carterfone and Consumer Choice in Mobile Broadband*, Working Paper #17 (Feb. 2007).

²⁰ *supra*. fn. 19.

²¹ *In re* In the Matters of Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. § 160(c) with Regard to Broadband Services Provided Via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided Via Fiber to the Premises; Consumer Protection in the Broadband Era, *Policy Statement*, FCC 05-151 (rel. Sep. 23, 2005).

The Policy Statement sets forth four network neutrality principles:

- 1) Consumers are entitled to access the lawful Internet content of their choice;
- 2) Consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement;
- 3) Consumers are entitled to connect their choice of legal devices that do not harm the network; and
- 4) Consumers are entitled to competition among network providers, application and service providers, and content providers.²²

The Policy Statement allows that network providers may engage in “reasonable network management” irrespective of the principles. That is, the Policy Statement does not create an absolute right for consumers. Where network management conflicts with one or more of the principles, the FCC’s policy may yield. Moreover, the Policy Statement is merely agency guidance on how it intends to act if presented with a certain situation. The Policy Statement does not itself adopt rules that broadband providers must follow, and it is not enforceable by third parties against broadband network owners.

These principles largely went unnoticed outside the telecom world until November 2005 when SBC (now AT&T) CEO Edward Whitacre set off a firestorm of controversy when he stated:

How do you think [content producers are] going to get to customers? Through a broadband pipe. Cable companies have them. We have them. Now what they would like to do is use my pipes free, but I ain't going to let them do that because we have spent this capital and we have to have a return on it. So there's going to have to be some mechanism for these people who use these pipes to pay for the portion they're using. Why should they be allowed to use my pipes?

The Internet can't be free in that sense, because we and the cable companies have made an investment and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts!²³

Although in the wake of criticism and punditry that followed, Mr. Whitacre eventually declared that “AT&T will not block or degrade traffic, period,” the damage was done.²⁴ Net neutrality proponents argued that Whitacre’s statement demonstrated the need for a non-discrimination obligation with respect to the Internet, and lobbied Capitol Hill extensively to include a neutrality provision. In the House of Representatives, proponents attempted to add a neutrality provision to a

²² *Id.* at ¶ 4.

²³ Interview of Edward Whiteacre, CEO of SBC by *Business Week* Chicago Bureau Chief Roger Crocket, *Business Week*, Nov. 7, 2005 available at http://www.businessweek.com/@n34h*IUQu7KtOwgA/magazine/content/05_45/b3958092.htm.

²⁴ Speech of Ed Whitacre, Chairman & CEO of AT&T, TelcomNEXT Keynote Speaker (Mar. 21, 2006).

telecom reform bill, but the effort failed when a House subcommittee deadlocked 12-12 on the proposed amendment. In the Senate, Oregon Democratic Senator Ron Wyden put a hold on the telecommunications bill then pending in the Commerce, Science, and Transportation Committee because it lacked effective Internet neutrality provisions and would concentrate too much power in the hands of the large telecommunications companies and cable providers.²⁵ Ultimately, despite strong backing from incumbent local telephone carriers, the bill languished in the Senate and did not become law.

The issue continues in the new Congress. After the Democrats took control following the 2006 mid-term elections, Senators Byron Dorgan (D-ND) and Olympia Snowe (R-ME) introduced a new net neutrality bill entitled the *Internet Freedom Preservation Act*, designed to block ISPs from billing Internet companies for preferential access to end users.²⁶ In the House of Representatives, Congressman Ed Markey (D-MA), a strong supporter of net neutrality, took over as chair of the Telecommunications and the Internet Subcommittee of the House Energy and Commerce Committee. Congressman Markey pledged to include net neutrality language in any telecom bills passed by his Subcommittee. So far, no significant net neutrality battles have arisen in the new Congress.

The Federal Trade Commission (FTC) also has waded into the network neutrality debate, citing its authority to engage in antitrust and consumer protection actions. The FTC formed an Internet Access Task force to examine issues being raised by converging technologies and developments.²⁷ However, while FTC Chairwoman Majoras argued that the FTC had *authority* to enter the debate, Ms. Majoras stated that “proponents of net neutrality have not come to us to explain where the market is failing or what anti-competitive conduct we should challenge.”²⁸ However, at the Broadband Connectivity Competition Policy Workshop hosted by the FTC in February 2007, Commissioner Jon Leibowitz stated that any solution to the network neutrality should at a minimum include the FCC’s “Four Internet Freedoms.”²⁹ In addition, Commissioner Leibowitz emphasized the FTC’s interest in the Fourth Freedom, asking, “Will carriers slow down or interfere with applications or services? If so, will consumers be told about this before they sign up? To my mind, failure to disclose such material terms or conditions should be considered ‘unfair or deceptive’ in violation of the FTC Act.”³⁰ Given the conflicting sentiments of Chairwoman Majoras and

²⁵ Pamela A. MacLean, *Taking Sides in Net ‘Neutrality’*, 52 Palm Beach Daily Business Review 226 (Aug. 28, 2006).

²⁶ Senate Bill 215 (Jan. 9, 2007).

²⁷ *FTC Chairman Addresses Issue of “Net Neutrality”* available at <http://www.ftc.gov/opa/2006/08/neutrality.htm>.

²⁸ *Id.*; see Tom Abate, *New Cop for High-Speed Net*, THE SAN FRANCISCO CHRONICLE, Feb. 11, 2007, available at <http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2007/02/11/BUGG3O194V1.DTL&type=tech>

²⁹ Prepared Remarks of Jon Leibowitz, *Navigating Between Dystopian Worlds on Network Neutrality, With Misery and Wretchedness on Each Side, Can We Find A Third Way?*, delivered at the Broadband Connectivity Competition Policy Workshop (Feb. 13, 2007) available at http://www.ftc.gov/speeches/leibowitz/070213Navigating_Between_Dystopian_Worlds.pdf

³⁰ *Id.*

Commissioner Leibowitz, it is unclear to what extent the FTC will actually become involved, but future proceedings at the Federal Trade Commission bear watching.

In 2006, the proposed (now approved) merger between AT&T and BellSouth Corporation created another forum for the net neutrality debate. After protracted proceedings before the FCC, in December 2006, phone giant AT&T agreed to carefully-worded neutrality obligations as one of the voluntary conditions it offered to secure FCC approval for its \$67 billion acquisition of BellSouth Corporation. The obligations included a promise to conduct business in accordance with the FCC's four principles of net neutrality and a commitment to a neutral networking and routing in its wireline broadband Internet access service. Specifically, AT&T agreed "not to provide or to sell to Internet content, application, or service providers ... any service that privileges, degrades or prioritizes any packet ... based on its source, ownership or destination."³¹

This condition only sparked more debate and uncertainty. Some net neutrality proponents argued that the pledge was meaningless because, among other things, it excluded AT&T's new IPTV offering (its video competition to the cable companies), while at the same time the FCC Chairman (who voted for the AT&T/BellSouth approval containing this pledge) declared that the conditions were "discriminatory and run contrary to commission policy and precedent."³² Furthermore, Chairman Martin stated that if FCC action was necessary to enact the net neutrality conditions "as a policy going forward, [he does] not support those aspects of the conditions and will oppose such policies." Furthermore, the Chairman made clear that the conditions do "not mean that the Commission has adopted an additional net neutrality principle. [The Commission] continue[s] to believe such a requirement is not necessary and may impede infrastructure deployment."³³ When later questioned by the Senate Commerce Commission about his willingness to enforce the conditions, Chairman Martin responded that he intends to stand by the agreement, but that the net neutrality conditions reached with AT&T could not be a template to "change commission policy or commission rules or regulations" in the future.

Most recently, the FCC began a formal inquiry into net neutrality. On April 16, 2007, the Commission released a *Broadband Industry Practices* Notice of Inquiry.³⁴ The Notice is very broad, seeking "a fuller understanding of the behavior of broadband market participants today."³⁵ Importantly, the proceeding is a preliminary step; it simply seeks information on industry practices, but does not propose to adopt any rules. If the Commission were to adopt binding rules, it would first have to release a Notice of Proposed Rulemaking describing the rules and providing an additional opportunity to comment on the rules.

³¹ See Letter from Robert W. Quinn, AT&T, to Marlene H. Dortch, Secretary, FCC, at 8 (December 28, 2006).

³² Rhonda Ascierio, *FCC Chair Rallies Against Net Neutrality for All*, COMPUTERWIRE (Feb. 2, 2007).

³³ Joint Statement of Chairman Kevin J. Martin and Commission Deborah Taylor Tate, Re: *AT&T Inc. and BellSouth Corporation Application for Transfer of Control*, WC Docket No. 06-74 (Dec. 29, 2006).

³⁴ *Broadband Industry Practices*, Notice of Inquiry, FCC 07-31 (rel. Apr. 16, 2007).

³⁵ *Id.* at ¶ 8.

Of most importance to the game industry, the Notice asks for comment to identify legitimate packet management practices employed by broadband network providers and service providers. The rhetoric of the net neutrality debate up until now has been focused on the extremes of whether services will be blocked or the Internet will be handcuffed in regulation. But those extremes are the easy cases. The complexity comes with the broad range of arrangements in the middle where traffic is affected in a more subtle manner. The real issue at hand is raised by the FCC in the Notice: how can policymakers identify the difference between mutually beneficial traffic management and potentially harmful exclusionary conduct?

Applicability to Online Gaming

Changes in the manner data is routed through the Internet have the potential to affect the gaming experience far more than that of most other web applications. After all, if under a new “tiered routing system” e-mail is given a lower priority, most users’ experience will not be dramatically affected – no one will likely notice if an e-mail appears in an inbox a few seconds slower than the current standard. Instant messaging also would be relatively unaffected by these changes, as the small amount of data passed would render the lower priority of the data generally unnoticeable. Even web browsing would likely only be moderately affected. Only the most graphics-heavy sites likely would experience a noticeable degradation in performance.³⁶

Instead, it is those applications that rely on (near) instantaneous data transfers that will be most affected. For instance, tiered routing systems could devastate VoIP and Internet video conferencing services – services where a delay of two or three seconds can render the service almost unusable. Most online games now fall into this category as well. Massively Multiplayer Online Games (“MMOGs”) are high-bandwidth, low-latency applications. If players are to navigate on-line worlds, data constantly must be sent back and forth to keep track of “where” those players are in those worlds and to communicate actions to the players. Delay in that information being passed back and forth results in inconsistent game play and a less pleasurable, less immersive experience.

For gaming companies, the battle over net neutrality is fundamentally a battle to avoid “latency” and “jitter” being introduced artificially into Internet gaming.³⁷ The big fear for gaming companies should be that one or more mainstream ISP will introduce excessive latency that will effectively prohibit their users from participating in online games.³⁸ This likely will not be aimed at restricting usage *per se*, but rather at extracting a fee from the game operator to create a smooth playing

³⁶ It’s worth noting that Internet video also likely fits into this category. While the large amounts of information required for video would result in a delay in the video starting, buffering technology likely would result in smooth playback.

³⁷ “Latency” can be defined as the amount of time it takes to get information through a network. Within computing, it generally refers to the amount of time taken for packet of data to travel from the sending application to the receiving application. “Jitter” is variability in latency, or delay. If a network provides varying levels of latency (i.e. different waiting times) for different packets or cells, it introduces jitter, which can be extremely disruptive to communications. Harry Newton, *Netwon’s Telecom Dictionary*, p. 518, 533.

³⁸ Tony Greenberg & Alex Veytsel, *Every Time You Vote against Net Neutrality, Your ISP Kills a Night Elf* (Nov. 18, 2006) available at <http://www.ramprate.com/marketcommentary/neutrality.html>.

environment or favoring a game with which the ISPs have an affiliation, joint venture or revenue sharing agreement.³⁹ In other words, ISPs could try to make good on Ed Whitacre's implicit threat – if the game companies want high speed access to the ISP's pipes, they'll have to pay for it.

Game companies should be prepared to respond to these challenges. The rise of massively multiplayer games and head-to-head gaming over consoles has made broadband critical to the success of many business models. Multiplayer game-play depends on fast and reliable data transmissions between servers and game clients. Voice over IP, chat, messaging, and other real-time communication tools made available by broadband networks enhance the social networking aspects of games, helping to build loyalty and to maintain subscriptions. And the impact of broadband is not confined to the PC game industry, as the Xbox 360 and the PS3 have demonstrated. The next generation consoles are as much broadband portals as they are gaming devices. Where broadband is deployed and how broadband service providers may act are increasingly important issues for all game developers and game publishers. The game industry stays silent on these issues at its peril.

In addition, regardless of whether the Internet remains open to all on a “best effort” basis (the *status quo*) or moves to some sort of a tiered-routing system, the cost of reaching end users likely is going up. It is unlikely that broadband network providers would ever completely block access to games. Indeed, in one prominent example the FCC has demonstrated a willingness to intercede in order to ensure the availability of VoIP access when local ISPs (who often also offer phone service) have attempted to block service by VoIP providers.⁴⁰ However, gamers will drive the network providers to upgrade the speed and quality of their networks – and the network providers will look for someone to pay for that upgrade. It would be naïve to believe that gaming companies will not foot at least some of that bill.

Game developers and publishers need to seriously consider how their products will survive in a world where reaching the end-user comes at a significantly higher cost. One way for the game industry to protect itself is for gaming companies to begin to view themselves not just as software companies, but also as service providers. Gaming companies should look at ways to gain greater control over the last mile delivery of traffic. One option might be for game providers to form strategic partnerships with ISPs. For instance, an ISP might value being the “official service provider” of a particular game. Consortiums of game developers might band together to form a “gaming certification” standard for use by ISPs in advertising in exchange for favorable routing deals. Another option would be setting up routing of game traffic in a manner designed to bypass network bottlenecks. While technically difficult as the ISPs have nearly exclusive control over the “last mile” of wire, technical solutions may be available to minimize any lag introduced by ISPs. Finally, content providers may want to consider the self-provisioning of broadband access in certain appropriate contexts.

³⁹ *Id.*

⁴⁰ *Madison River Communications, LLC*, File No. EB-05-IH-0110, DA 05-543 (released March 3, 2005) (*Madison River*).

Finally, the net neutrality debate is focusing Washington's attention on something that is really important: America's broadband networks are simply too slow and too expensive given the transmission speeds available. One potential by-product of this focus might be an opportunity to improve the quality of access networks in ways that benefit games in general. For example, the industry might be able to specify minimum requirements for things such as throughput, overall latency, jitter and other characteristics impeding game play today. Such minimum requirements also could provide a way to measure U.S. progress in deploying broadband networks compared to other countries in the world.

Other Broadband Deployment Developments

Cable vs. Telecom: The Triple Play (Phone, Broadband, and Video)

In 2005, then-FCC Chairman Powell stated, "Put zeros and ones in a stream, they can represent a picture, voice, or video. I do not like it when people talk about the triple play. There is no triple play, there is one play and it is data."⁴¹ While this statement may be true, triple play has come to refer to the convergence of three previously separate forms of communication – phone service, video service, and broadband internet access – when offered by the same broadband provider.

At the moment, cable companies lead in offering a triple play. Both Comcast and Time Warner offer packages that provide all three services at discounted rates to the consumer. Furthermore, they provide service over wires already in existence, as their networks generally already have the necessary capacity to handle voice service. Essentially, having been providing both video and internet services for years, the cable companies simply needed to ensure they had sufficient bandwidth and technology available to add VoIP technology to the facilities they already owned.

In contrast, telecom companies have been upgrading their networks with optical fiber and DSL technologies to reach their residential base. In June 2004, SBC (now AT&T) announced its four to six billion dollar effort to implement a "fiber-to-the-node" technology, where high-speed fiber optic wire would be run to a central location in a neighborhood or subdivision, and then high-speed service would be provided over copper loops.⁴² AT&T's U-Verse service, offered in partnership with Microsoft Corp., has the company boasting that the new system will offer improved speed and be able to deliver high-definition video to IP-enabled televisions, personal computers, portable devices, and the X-Box gaming console. Verizon also has chosen to invest in triple play services, though it has chosen to take a more fiber-intensive approach. As part of a \$2.8 billion foray, Verizon will not only run fiber optic wire to each customer's house (*i.e.*, fiber to the home, not just fiber to the node), but will also acquire local cable franchises in every community they serve in order to offer expanded IPTV content as well.⁴³

⁴¹ Michael K. Powell, *Digital Migration: Toward a New Telecom Act*, 4 J. ON TELECOM. & HIGH TECH. L. 5, 27 (2005-2006).

⁴² Ron Whitworth, *IP Video: Putting Control in the Hands of Consumers*, 14 COMMLAW CONSPECTUS 207, 212 (2005-2006).

⁴³ *Id.*

AT&T and Verizon also are relying on a new technology to deliver video services. Both are deploying a version of Internet protocol-based services dubbed IPTV. While traditional cable systems devote a slice of bandwidth for each channel and then cablecast them all out at once, IPTV uses a “switched video” architecture in which only the channel being watched at that moment is sent over the network, freeing up capacity for other features and more interactivity.⁴⁴ Essentially, this constitutes a web service that provides “video channels” on demand – only what a user is actually watching will be sent over network. Another factor that will distinguish IPTV from traditional cable and satellite offerings to the end user is the significant number of consumer-friendly options that accompany the service. For instance, AT&T’s U-Verse offers increased DVR functionality, picture in picture channel surfing without additional TV tuners, and web remote access.⁴⁵ Additionally, U-Verse promises that in the near future, customers will be able to access DVR recorded content on any television in the home, program their DVRs on their AT&T wireless phones, and provide Caller ID through the television box.⁴⁶ Such advanced features may make IPTV more desirable when compared to traditional cable companies, which so far remain tied to the concept of the traditional cable box, even in its new, HDTV offerings.

Broadband over Power Line

In most homes today, there are two major options for broadband Internet access – the cable wiring and the telecommunications wiring. However, other types of service exist at the fringes of these markets. One such alternative has already been mentioned – Broadband over Power Line (BPL) technology. BPL technology offers one key advantage – almost every home is already wired for electricity and thus the network is already built. However, there have been a myriad of technical difficulties with BPL, and data speed and consistency have both been problems. Furthermore, BPL has engendered criticism because of its tendency to generate radio interference that can disrupt the pursuits of amateur radio enthusiasts.

The FCC has taken some action to encourage the development of BPL networks. In October 2004, the Commission established technical requirements for BPL devices used for Internet access service, including changes to its equipment verification processes.⁴⁷ This allows a public utility to use the electrical wiring system as a wireline network, theoretically turning every electrical outlet in a house into a potential Internet port. However, while companies such as Google and Goldman Sachs have invested in the technology, its promise remains uncertain and its costs have been higher than

⁴⁴ Michael Grebb, *Telcos Prep for IPTV Play*, WIRED NEWS (Aug. 3, 2005) available at <http://www.wired.com/news/business/0,1367,68362,00.html>.

⁴⁵ http://www.att.com/Uverse/files/UverseFeatures_2-22.pdf.

⁴⁶ http://www.att.com/Uverse/files/FutureApps_2-22.pdf.

⁴⁷ *In the Matter of Amendment of Part 15 regarding new requirements and measurements guidelines for Access Broadband over Power Line Systems*, ETS Docket No. 04-37; *Carrier Current Systems, including Broadband over Power line Systems*, ET Docket No. 03-104, Report and Order, 19 FCC Rcd 21265 (2004).

anticipated.⁴⁸ As a result, BPL has been deployed much slower than its proponents have anticipated, with only 5,000 lines deployed as of June 30, 2006.

Wireless Broadband

Wireless service also offers an alternative for high speed internet service. Verizon, AT&T, and Sprint/Nextel all offer high-speed wireless broadband over their cellular phone networks. Generally offering speeds less than current DSL, these services may qualify as “broadband” but are not viable alternatives for most applications. Also, both Verizon and AT&T have taken the position that their “unlimited” service is not actually unlimited – rather it is limited to Internet browsing, e-mail, and corporate intranet access.⁴⁹ The provisions ban, for example, a computer user from downloading episodes of a television show (or potentially even music) from i-Tunes, or using VoIP providers like Skype or Vonage.⁵⁰ The wireless ISPs justify this claiming limits on bandwidth – the same network that provides high speed internet access must also provide phone service.

A more robust wireless platform may be on the horizon. As part of the transition to digital television, a large block of spectrum previously used for UHF-TV will soon become available for re-use. This spectrum, known as the “700 MHz band”, has tremendous promise. Many observers believe the band is optimal for broadband transmissions because the signals will travel very far (many miles), are resistant to interference from wind, rain and other elements, and will penetrate most buildings and other spaces. Thus, this spectrum likely will yield new alternatives for both mobile and fixed wireless broadband applications.

By statute, the FCC must auction off the commercial portion of this spectrum for use. That auction will begin no later than January 2008, and is anticipated to be one of the largest auctions in the FCC’s history. Anticipated bidders include the major mobile wireless carriers, the satellite DTV providers, cable television providers and rural broadband providers. As of April 2007, the Commission was working on establishing the service rules for the 700 MHz band, and it anticipates releasing the rules in June of this year. It will then establish the auction bidding procedures, and the auction is expected to start in December.

⁴⁸ Marguerite Reardon, *Broadband's power-line push*, CNET NEWS.COM, available at http://news.com.com/Broadbands+power-line+push/2100-1034_3-5780316.html.

⁴⁹ Tim Wu, *Wireless net Neutrality: Cellular Carterfone and Consumer Choice in Mobile Broadband*, WORKING PAPER #17 (Feb. 2007), p. 13.

⁵⁰ *Id.*