

Net Neutrality: The Cure is More Fiber

What is net neutrality? What it means for those who build first-mile fiber

By Carl E. Kandutsch, Ph.D., J.D.

Recent telco mergers, and recently proposed legislation that would explicitly allow network owners to add a surcharge for top-tier access to such services as Vonage VoIP and Google, have pushed the concept of net neutrality to the fore. A little history will explain what the concept really means, and what is at stake for the broadband industry.

I first heard of something called “network neutrality” during the FCC’s review of AOL’s acquisition of Time Warner Cable in 2000. At that time, “open access” was the hot topic in Washington and elsewhere – the idea that in order to preserve a competitive market for Internet access, applications and content, AOL Time Warner should be compelled to allow unaffiliated ISPs a non-discriminatory right to interconnect to Time Warner cable systems.

After being instructed to write an open access condition into the merger approval order, FCC staff was told to back off. AOL Time Warner had made a voluntary commitment to negotiate carriage agreements with unaffiliated ISPs (such as Earthlink) and the Federal Trade Commission had imposed a limited open access requirement after it reviewed the proposed merger. The concept of “net neutrality” came up as a softer policy substitute for open access, an option that would be less intrusive, less burdensome (on both regulators and the regulated firms) and less expensive.

Whereas open access is a *structural* measure (based on the idea, drawn from anti-trust law, that in order to ensure a competitive market, competitors must have equal access to the incumbent’s unique “essential facilities”), net neutrality was and is a *behavioral* measure. The regulated

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What is Net Neutrality?”

The basic principle of network neutrality simply states that the functionality of the network should be neutral with respect to the content, software and legal hardware that either ride on the network or connect to it. To the extent that net neutrality is respected, network owners may not discriminate among the bits that pass over their transmission facilities, for example, by blocking or retarding data of certain types or from particular sources, or otherwise limit an end-user’s access to services, applications or content that is otherwise legal.

Many of the arguments associated with network neutrality first came into promi-

nence in mid 2002, when they were advanced by the High Tech Broadband Coalition, a group of developers for Amazon.com, Google, Microsoft, and others. But the stand-alone concept of “network neutrality” was developed mainly by legal academics. They prominently included law professors Tim Wu and Lawrence Lessig, along with FCC Chairman Michael Powell, who, in a 2004 speech, stated that consumers must have the following four freedoms:

1. Consumers are entitled to access the lawful Internet content of their choice;
2. Consumers are entitled to run applications and 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.

On August 5, 2005, the Commission formally adopted a policy statement expressing the agency’s commitment to these four principles.¹ At the time of adoption, current FCC Chairman Kevin

Martin stated that these four principles were not enforceable, and the inclusion of a consumer entitlement to “competition” suggests that the FCC simply assumed that emerging competition among facilities-based providers (fiber, wireline, cable, wireless, etc.) would make adoption of an enforceable rule unnecessary.

That helped open the door. Since then, several other enforceable net neutrality laws or regulations have been proposed, and the concept will remain a major bone of contention in the debate now unfolding in Congress over major revisions to the Federal Communications Act.

Several of the draft telecommunications bills now being circulated in Congress contain explicit network neutrality provisions, and the concept is deliberately excluded from other versions. Senator Ron Wyden (D-Oregon) has introduced stand-alone network neutrality legislation called the “Internet Non-Discrimination Act of 2006.”² Among other things, this bill would prohibit “network operators” from interfering with, blocking, altering, modifying or changing the data bits that pass through their networks, and prohibit the creation of a “priority lane” wherein content providers can buy quicker access to consumers, leaving non-payers to slog their data through the slow lane. The Wyden bill also provides a mechanism whereby aggrieved parties may lodge complaints with the FCC.

It is too early to know whether the next big telecommunications legislation will address network neutrality at all, or if it does, how the concept will be implemented.

What Problems Does Net Neutrality Address?

In early 2005 an incident occurred that validated the underlying concerns of net neutrality advocates: VoIP provider Vonage filed a complaint with the FCC alleging that a small rural local telephone company, Madison River Telephone, was

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blocking consumers from obtaining access to Vonage’s VoIP service. The FCC initiated an investigation of the allegations that Madison River had violated the requirement to interconnect and carry traffic in section 201(b) of the Communications Act. On March 3, 2005, the FCC’s Enforcement Bureau reached a settlement agreement with Madison River, which prohibits the company from blocking the “ports” for VoIP traffic. Chairman Powell noted that it was an important demonstration of the FCC’s ability to enforce its “Internet Freedom” policy without the need for explicit FCC rules. However, Madison River’s voluntary settlement relieved the FCC from making any ruling that would articulate its legal authority to enforce the principles of net neutrality.

The Madison River case illustrates the kind of issue that net neutrality is intended to address. The concern is that the owners of network infrastructure, particularly the first-mile connection between the Internet backbone and the subscriber premises, will strategically leverage that ownership to suppress or otherwise control the subscriber’s access to desired content and applications, and perhaps their use of physical or virtual devices, for the purpose of protecting one or more components of the owner’s core business.

For example, telephone companies

may have an incentive and ability to protect their voice telephony business by blocking or restricting subscriber access to VoIP. Cable companies may have an incentive and ability to protect their cable video business by blocking or restricting subscriber access to Internet-based video (IPTV). To the extent such network owners are vertically integrated, they may have an incentive and ability to block or restrict subscriber access to unaffiliated web content.

It is important to realize that it is not only consumer advocacy groups who raise this kind of concern; to some extent, it is shared within the FCC. For example, on October 31, 2005, the FCC approved the two mergers of the major long distance companies with RBOCs (SBC and AT&T; MCI and Verizon). In approving the mergers, the FCC adopted a number of conditions, one of which was an “enforceable” condition that obligates the merging parties to comply with net neutrality rules for two years. The FCC’s press release states (emphasis added):

The Commission also adopted in the Order as *enforceable conditions* certain voluntary commitments made by the applicants. . . .The applicants committed for a period of two years to conduct business in a way that comports with the Commission’s Internet policy statement [adopted in August and] issued in September.³

Industry consolidation has picked up momentum, with AT&T’s recent announcement of its intention to acquire BellSouth for \$67 billion, thus reducing the number of remaining Baby Bell companies (eight were created by the breakup of AT&T in 1984) to three, and

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making the lone independent, Qwest, a logical acquisition target for Verizon. A merged AT&T/BellSouth will control 22 percent of all consumer dollars spent on telecommunications services (including video services) and 34 percent of dollars spent in the business telecommunications market. TNS Telecom concludes that after the deal is closed, three of the nation's top telecom providers – AT&T, Verizon and Comcast – will control 49 percent of the total consumer market, and in the business market AT&T and Verizon will represent 55 percent of spending.⁴ Many analysts predict a corresponding wave of consolidation in the cable television industry in response.

Consolidation is an important term in the network neutrality debate because the fewer network owners there are in the market, the greater becomes their ability to leverage ownership into control over markets for products and services that depend on the networks for access to customers. The public has no choice but to accept AT&T's network management decisions when there are no alternative networks available.

Some knowledgeable people dismiss these concerns, referring to network neutrality as “a solution in search of a problem.”⁵ They argue that there is a dearth of evidence of discriminatory conduct by network owners, and that net neutrality regulation would produce untoward consequences.

It is certainly true that legislation in-

terfering with an owner's property rights ought to be based on solid empirical evidence of abuse. It is no less true, however, that wise public policy is forward-looking, and must anticipate problems, based on historical patterns and our understanding of business strategies and incentives, before anti-competitive practices have a chance to become entrenched.

Moreover, as the Madison River and

SBC CEO Edward Whitacre: “How do you think [Google, Vonage, etc., 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?”

similar cases demonstrate⁶, there really is *some* evidence of “bit discrimination” on the part of incumbents, and concerns were heightened earlier this year (before the AT&T and BellSouth acquisitions), when SBC's CEO Edward Whitacre told a Business Week interviewer, regarding non-facilities-based Internet content and service providers like Google, MSN and Vonage:

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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!⁷

The idea that Internet content or applications providers who use excessive bandwidth (for the provision of real time video, or music downloading, for example) should pay network owners a fee – establishing a tier-priced Internet – does not itself violate most versions of the network neutrality principle. But it does raise some interesting questions that get at the deeper concerns of network neutrality advocates.

For example, why should AT&T be able to charge Google – which is paying ISP charges – a surcharge for access to AT&T subscribers, who are also paying ISP charges? Presumably Google would find a way to recover the added cost of the surcharge by passing it along to Google users (that is, to AT&T subscribers). Thus, Google users would pay

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twice, once (to AT&T) for their connection to the Internet, and once (to Google) for the content they view on the Internet. But that Internet connection is valuable to consumers only insofar as it enables access to content; no one would pay AT&T for a raw connection to the Internet, if that connection were not a means of accessing the content available via the Internet, such as Google's content.

The assumption underlying Whitacre's remark is that the data passing through the network should be treated as metered and thus billable events, as services, rather than as bits. From the consumer's perspective, however, the value received does not reside in access to the network as such, but in access to what resides on the edges of the network; the value is in *end-to-end connectivity*.

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Whitacre's remark also points to the kind of comprehensive market power that ownership of the first mile entails, at a time when consolidation is weakening the prospects for facilities-based competition.

Were "inter-modal competition" a reality as opposed to a slogan, AT&T would be talking about paying Google, MSN and Yahoo to attract their valuable content to AT&T's network, rather than

the reverse; the existence of first-mile alternatives would preclude Whitacre's conception of the network as a toll booth through which Google's content must pass through in order to reach consumers. And this suggests that perhaps the problems that network neutrality is supposed to solve should instead be avoided altogether. If the problem is the existence of a tollbooth that impedes free traffic, the solution is not to re-structure the tollbooth, but build more roads.

Solutions

The real concern raised by net neutrality is not over a tiered pricing for Internet services, which is perhaps an inevitable result of technological change shaping commercial markets, but that in a networked world where network owners have the power to control how the network is used, the sort of disruptive innovation in equipment, services and applications that has hitherto characterized the Internet is unlikely to thrive.

In the cable-telco duopoly situation evidently envisioned by the FCC, the cable and telephone companies that control Internet connectivity also provide video entertainment and telephony services that are not dependant on the Internet connection. These traditional services come with predictable cash flows and entrenched business models that have long been isolated from

and adverse to competitive conditions.

Insofar as the Internet permits users to access voice and video data applications, either for free or by paying fees to innovative providers like Vonage or Skype, the Internet inherently threatens to cannibalize the incumbents' core services.

In my view, any net neutrality regulation that is intricate enough to do its job – which is to force cable and telco incumbents to adhere to conditions that permit cannibalization of their own core services – is unlikely to be effective, for political, institutional and perhaps technical reasons as well. The failure to implement the 1996 Telecommunications Act's interconnection obligations should provide a valuable lesson on the difficulties of forcing competition on powerful and recalcitrant incumbents. The inherent difficulties are magnified in today's post-boom and -bust deregulatory climate.

Fundamentally, the federal policy since about 2000 has been to use regulatory restraint to encourage investment in the top-down buildout of broadband networks. The assumption is that network owners will build the infrastructure required to support vibrant competitive markets for emerging applications and services if they are not forced to share their assets with unaffiliated providers.

In one way or another, this policy has given the United States a global ranking of 16th in national broadband penetration among the top 21 industrialized nations. One can argue about the causes of this dismal record, but it's difficult to deny that creative solutions are needed. Net neutrality may not be a "solution in search of a problem," but rather a solution to the wrong problem, a problem that should be solved by disappearing *as a problem*.

Truly creative solutions are unlikely to emerge from a new set of arcane and intricate regulations forcing incumbents to conform to an agenda that runs contrary

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to their self-interest. Therefore, it seems to me that the focus should be on finding ways to bypass the first-mile bottleneck altogether. The goal should be the creation of a universally accessible, bandwidth-rich, deep-fiber, open-IP network employing future-proof network architecture that enables users to obtain ever-increasing performance with only moderate incremental new capital expenditures. Network interconnection and access should be open to other network operators, applications service providers, content providers and end users, in order to encourage investment, competition and innovation from the edges of the network.⁹

If the top-down model of broadband infrastructure deployment, which depends on the strategic decision-making of monopoly service providers, is unlikely to deliver this vision, then it needs to be supplemented (not replaced) by a different model: A bottom-up deployment strategy that depends on end-users to make their own investments in intelligent infrastructure to realize the full benefits of broadband connectivity in a competitive environment.

The bottom-up strategy minimizes the investment burden facing service providers, because customers share the cost of the infrastructure, and moves decision-making power away from a distant central authority into the hands of those who understand local needs *because they are their needs*.

Because large, risk-averse incumbents invest based on what users tell them they want, there is an inevitable delay during which users prove their willingness to pay for innovative services, the utility of

which cannot be immediately discerned. In a user-driven network, this communications gap between investment and value is reduced; users make specific investments in order to achieve specific, local results. While they may be disappointed with the result in any given case, the risk of loss is smaller and therefore more sensibly undertaken.

In the real world, implementing a bottom-up broadband deployment strategy means adopting a national policy that encourages rather than discourages alternative first-mile solutions, including FTTP, unlicensed wireless (WiFi), and broadband over power-lines (BPL), as well as encouraging new entry by non-traditional carriers, such as municipalities, public/private partnerships, “smart communities” and regional cooperatives of various kinds. Such non-traditional deployment strategies are described in this magazine on a monthly basis.

Debates over America’s communications policies, such as the debate over network neutrality, are too often constrained by a politically charged framework that doesn’t really correspond to anything in the real world, such as the idea that one must choose between the “free market,” where property interests are if not absolute then paramount, and “government regulation,” where property interests are subordinated to a vagary known as “the public interest.”

But a policy that allows and encourages users to build their own networks, designed to address their local needs, does not entail a compromise between property rights and the public interest, however

defined. Envisioning and implementing alternative paths from the network to the end user, paths that circumvent the first-mile bottleneck, starts with the realization that the first mile is less a bottleneck than an opportunity. **BBP**

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⁴ <http://www.tnstelecoms.com/press-3-13-06.html>.

⁵ See, for example, the recent White Paper produced by the United States Internet Industry Association, at <http://www.usiia.org/pubs/neutralty.doc>. (“Network Neutrality is a solution in search of a problem – a hypothetical issue that cannot occur because of the stated commitments of industry, the Federal Communications Commission and the Congress to prevent any such harm.”)

⁶ A recent White Paper from Public Knowledge documents at least eight instances of cable, telephone and wireless incumbents allegedly blocking or restricting undesirable traffic on their networks. See, John Windhausen, Jr., “Good Fences Make Bad Broadband,” available at <http://static.publicknowledge.org/pdf/pk-net-neutrality-whitepaper-20060206.doc>. There are allegations that Vonage’s VoIP service does not function well over Comcast’s cable modem connections. See, <http://slashdot.org/articles/06/03/02/139241.shtml>.

⁷ http://www.businessweek.com/@n34h*IUQu/7KtOwGA/magazine/content/05_45/b3958092.htm.

⁸ This theme is developed in the work of Bob Frankston, who refers to the service-oriented model of the Internet as the Regulatorium, and argues for its replacement by a connectivity-oriented model. See, for example, “Connectivity is a Utility,” at <http://www.frankston.com/?name=ConnectivityUtility>.

⁹ This formulation is taken from Dr. Stagg Newman’s “Broadband Development: From Vision to Reality,” in Austin and Bradley, *The Broadband Explosion* (HBS Press 2005), p. 40. VoIP and Google, have pushed the concept of net neutrality to the fore. A little history will explain what the concept really means, and what is at stake for the broadband industry.

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