

inappropriately grounded in the “client/server” perspective of Internet architecture, which ignores Mozilla’s own assessment of the nature of today’s (and tomorrow’s) Internet. Given the significant conceptual overlap between the two proposals, Mozilla’s will be discussed in detail, with ancillary comments on the similar portions of the Narechania & Wu *ex parte*.

To motivate its proposal, Mozilla defines “side A” and “side B” Internet services that are “separable from interconnection and peering, as they apply only to the delivery of traffic within the network controlled by a single operator.”<sup>123</sup>

The “side A” services connect local customers to the entire, outside Internet, while the “side B” services offer to remote endpoints the ability to reach the ISP’s local subscriber customers.<sup>124</sup>

Mozilla argues that the Commission’s various Orders that classified broadband Internet access services as information services only addressed “side A” services.<sup>125</sup> Mozilla argues that “side B” remote delivery services should be classified as Title II telecommunications services, noting that such an action by the Commission would not be a “reclassification” as the commercial relationships between ISPs and their subscribers can remain information services. Mozilla also argues that the “side A” services can be left as Title I information services.<sup>126</sup>

The Narechania & Wu *ex parte* offers, as one of the alternatives advanced therein, a similar approach based on what they denote as a “call” and “response” model of services provided over broadband Internet access networks:

. . .the FCC can split the facilities-based services offered by broadband carrier (*sic*) into two discrete transactions: first, a *call* by broadband subscribers to request data from a third-party content provider; and second, a content provider’s *response* to the subscriber. Imposing this constructed two-state call-and-response frame on the structure of internet

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<sup>123</sup> Mozilla Petition, p. 8.

<sup>124</sup> *Id.*

<sup>125</sup> Mozilla Petition, p. 9.

<sup>126</sup> Mozilla Petition, p. 12.

traffic—a frame that is derived from the D.C. Circuit’s recent decision in *Verizon*—allows the Commission to separately consider the appropriate regulatory treatment for each.<sup>127</sup>

The Narechania & Wu *ex parte* goes on to recommend that the “sender-side” traffic be classified as a telecommunications service.

AARP finds merit in aspects of both the Mozilla’s petition and Narechania & Wu *ex parte*, and certainly agrees with examples and conclusions regarding the importance of common carriage classification for remote delivery (or sender-side delivery) services. However, the Mozilla and Narechania & Wu *ex parte* proposals to leave the commercial relationship between ISPs and their subscribers as information services is not reasonable, a point which a complete reading of Mozilla’s petition makes abundantly clear.<sup>128</sup> The fact that the Mozilla’s Petition proves the need for blanket reclassification of “side A” and “side B” are discussed below.

#### **A. Mozilla and Narechania & Wu prove the need for blanket reclassification**

To clarify the discussion, Mozilla defines “remote delivery services” and its “side B” construct as the same thing:

The actual and potential services between an ISP and a remote endpoint enable that endpoint to communicate with the ISP’s local subscribers. *This represents a “side B” or “remote delivery” service in the “two sided” Internet access service structure.*<sup>129</sup>

Mozilla also notes that the modern Internet, the “vibrant, dynamic, evolving many-to-many universe,”<sup>130</sup> is one where “any organization and *any individual* can be a remote ‘host’ for Internet traffic.”<sup>131</sup> Thus, any individual can utilize “side B” services, but Mozilla overlooks where “side B” begins for those hosts that are connected via mass-market broadband

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<sup>127</sup> Narechania & Wu *ex parte*, p. 13, emphasis in the original.

<sup>128</sup> To be clear, the Narechania & Wu *ex parte* does not limit its recommendations to the “sender-side” proposal. Rather, the Narechania & Wu *ex parte* points to the appropriateness of the reclassification of broadband Internet access services as telecommunications. See, Narechania & Wu *ex parte*, pp. 15-20.

<sup>129</sup> Mozilla Petition, p. 7, emphasis added.

<sup>130</sup> Mozilla Petition, p. 4.

<sup>131</sup> Mozilla Petition, p. 11, emphasis added.

connections. For example, a Web Real-Time Communication (WebRTC) user's delivery of voice, video, and peer-to-peer information will result in an end-user becoming a remote endpoint that needs the ability to reach another broadband subscriber that is connected to some other ISP located elsewhere on the Internet. What the Mozilla petition misses is the fact that mass-market broadband subscribers acquire some of the "remote delivery" service that they need from the same entity that provides their "side A" broadband Internet access service. Of course, the mass-market broadband subscriber also requires "remote delivery" service offered by some other broadband provider on the terminating end of the transmission. Mass market broadband Internet access customers already demand, and are sold, the first leg of remote delivery services by their broadband provider. Specifically, mass market broadband subscribers are sold a service that provides the ability to both *upload*, as well as download information. *Every time that a consumer uploads, they are using a service that enables "remote delivery."*<sup>132</sup> As Mozilla notes, any individual can be a remote host for Internet traffic.<sup>133</sup> Thus, it makes no sense to leave the "side A" services classified as Title I information services.<sup>134</sup> Classification of both "side A" and "side B" of the access market as telecommunications makes sense from a technical, market, and legal perspective. Ease of administration is also promoted by classification of both "side A" and "side B" as telecommunications services.

## VII. Peering relationships and Title II

The NPRM offers the tentative conclusion that peering, because it was not considered in the *Open Internet Order*, should remain off the table as a matter for consideration in light of the

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<sup>132</sup> This is just as true when a consumer sends an e-mail message, clicks a web link, or uploads a video to YouTube.

<sup>133</sup> Mozilla Petition, ¶11.

<sup>134</sup> The split suggested by Mozilla and the Narechania & Wu *ex parte* would also have the perverse incentive of discouraging innovation associated with consumers' ability initiate communications that required remote delivery, i.e., to upload information, and would also potentially discourage broadband providers from investing in improvements in the upload side of Internet access.

*Open Internet Order's* requirements.<sup>135</sup> AARP believes that the Commission must take a broader view of discrimination and blocking. Broadband providers have access monopolies for their subscriber base. As noted in the NPRM, “absent multi-homing, an end user has only one option to reach a given edge provider’s content.”<sup>136</sup> The market power possessed by broadband providers in retail markets for broadband Internet access also translates into market power with regard to edge providers who need to reach their subscribers/users. Recent actions taken by broadband providers to extract payment from edge providers through interconnection charges raise troubling questions regarding the ability of broadband providers to disadvantage rivals, and to assess charges on both sides of the broadband platform.<sup>137</sup>

Arguments that broadband providers are somehow disadvantaged by the growth of Internet traffic are specious. Broadband providers have faced nearly exponential year-over-year growth in traffic flows for the entire history of the broadband market. Figure 2 summarizes the trend.<sup>138</sup>

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<sup>135</sup> NPRM, ¶59.

<sup>136</sup> NPRM, ¶46.

<sup>137</sup> “Comcast and Netflix Reach Deal on Service,” *New York Times*, February 23, 2014.

<http://www.nytimes.com/2014/02/24/business/media/comcast-and-netflix-reach-a-streaming-agreement.html>

<sup>138</sup> “Internet Usage Data Show U.S. Expanding International Leadership,” USTelecom Research Brief, November 7, 2013, p. 2. <http://www.ustelecom.org/sites/default/files/documents/110613-usage-research-brief.pdf>

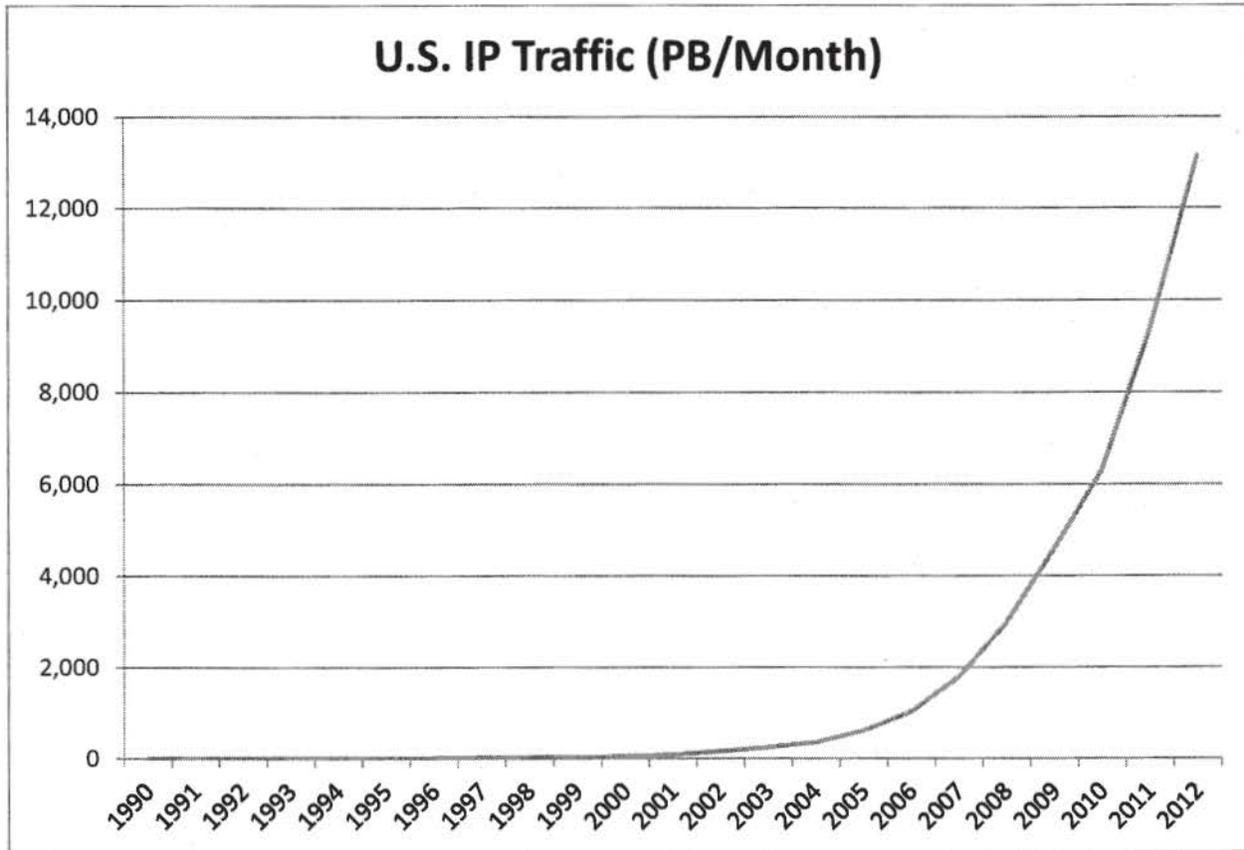


Figure 2: U.S. IP Traffic, 1990-2012

Figure 2 shows dramatic growth in traffic, starting at about the time that the *Cable Modem Order* was released. Because of the ongoing growth in traffic, broadband providers have had to continuously upgrade their network's capacity, both at the interconnection ports at the edge of their network where they exchange traffic with other networks, and from their network edge to the end user. The costs of these upgrades were recovered, until very recently, exclusively from end-users through their monthly fees for broadband Internet access. There was no indication that the historical growth in traffic was imposing any financial or technical burden on the broadband providers. In fact, broadband providers benefit from the growth in traffic volume associated with video services as it drives end-user demand for higher-priced, higher-speed offerings. For

example, as recently noted in *Forbes*, Comcast is not a victim of the growth in video traffic, but will instead reap financial rewards because of the growth in over-the-top video traffic:

Comcast offers high speed Internet to more than 20 million customers, and we expect this number to reach around 33 million by the end of our forecast period. Driving this growth will be further market penetration in the U.S. *and increasing demand for high priced tiers for video streaming.*<sup>139</sup>

Network neutrality and an open Internet depend on the lack of discrimination and blocking from end-to-end. Competitive Internet transit and peering markets operated successfully until the maturation of last-mile broadband markets. Last-mile broadband providers have access monopolies to the end users that edge providers need to reach.<sup>140</sup> The recent activities of Comcast and Verizon vis-à-vis Netflix are inspired not by problems associated with the continuing trend of increasing traffic volume, but by the fact that Netflix has been so successful. Netflix provides an easy target for hold-up by broadband providers. The Commission should extend network neutrality oversight to interconnection arrangements associated with broadband providers precisely because those firms have access monopolies, as well as incentives to hamstring over-the-top rivals of their affiliated services.

### **VIII. Transparency**

The NPRM tentatively concludes that broadband providers should disclose meaningful information regarding the “source, location, timing, speed, packet loss, and duration of network congestion.”<sup>141</sup> AARP believes that this type of information, if accessible and presented to end-user consumers and edge providers in an easy-to-understand format, would prove to be useful.

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<sup>139</sup> “Comcast Will Continue To Benefit From U.S. Broadband Growth,” *Forbes*, March 20, 2014. <http://www.forbes.com/sites/greatspeculations/2014/03/20/comcast-will-continue-to-benefit-from-u-s-broadband-growth/>

<sup>140</sup> Peyman Faratin, David Clark, Steven Bauer, William Lehr, Patrick Gilmore, & Arthur Berger, “The Growing Complexity of Internet Interconnection,” *Communications & Strategies*, no. 72, 4th quarter 2008. [http://www.akamai.com/dl/technical\\_publications/growing\\_complexity\\_of\\_internet.pdf](http://www.akamai.com/dl/technical_publications/growing_complexity_of_internet.pdf)

<sup>141</sup> NPRM, ¶83.

AARP believes that information regarding network outages should be added to the NPRM's proposed list of metrics, and that because interconnection ports are infrastructure under the broadband providers direct control, data on network congestion should extend to delays associated with traffic entering and leaving the broadband provider's network.

AARP notes that most providers make available a statement of network management principles on their web sites. AARP found, however, that some are easier to find than others. The Commission should, as part of the transparency requirement, require the prominent placement of information regarding network management practices in broadband provider marketing materials, and should require broadband providers to include keywords in descriptive materials that would encourage easy identification of the materials by search engines.

The Commission should work with broadband providers and other interested parties (including consumer organizations) to develop a standardized reporting format for information regarding the "source, location, timing, speed, packet loss, and duration of network congestion."

Standardized reporting will encourage consumer understanding, and will enable side-by-side comparisons of performance.

## **IX. Conclusion**

AARP urges the Commission to reclassify wireline broadband services as common carrier services. The alternative of enshrining discrimination as a means to support Section 706 authority will undermine edge-provider innovation, thus chilling demand for broadband services and undermining the "virtuous circle" so clearly illustrated by the Commission in the *Open Internet Order*. While reclassification could be subject to legal challenges, changed circumstances clearly support the reclassification, and Title II classification should withstand

those challenges. Treating broadband as a Title II service would create an environment of regulatory certainty regarding the rights and obligations of edge providers, broadband providers, and consumers. That regulatory certainty will ensure a long and robust future for the “virtuous circle” identified in the 2010 *Open Internet Order*.

## Glossary of Terms

ADSL	Asymmetric Digital Subscriber Line. Broadband services that are provided by telephone companies.
Bandwidth	A measure of the capacity of a communications channel.
Best Effort Service	On the Internet there is no centralized control of the network. As a result, service quality on the Internet is not guaranteed and may deteriorate during times of heavy use. This type of service is called best effort—the user gets best the network can deliver at a point in time.
Broadband	According to the FCC’s most recent definition, data transmission speeds of at least 4 Mbit/s downstream (from the Internet to the user’s device) and 1 Mbit/s upstream (from the user’s device to the Internet).
Broadband ISP	A company that provides broadband Internet access services. Typically a telephone company that provides DSL service, a cable company that provides cable modem service, or a fiber based provider.
Cable Modem	A device that allows connection of a computer to a cable television company’s network for the delivery of Internet access service.
Client	A computer or device that uses information provided by host computers (or servers). Personal computers, tablets, and smartphones typically are "clients." (See also, remote computer.)
Client/Server	An approach to network computing where powerful computers deliver content and services over a data network to computers or devices that are less powerful. An individual using a Google search on a tablet computer provides an example of client/server computing, with the tablet being the “client.”
Common Carrier	A common carrier offers its services to the general public, and is typically obligated to offer service on a nondiscriminatory basis.
Communications Act	The federal Communications Act of 1934, as amended.
Data	Representations of information in a manner that is suitable for communication, interpretation, or processing.
Data Communications	The transfer of data between points.
Data Network	Networks that are designed to transmit data.
Dial-up Connection	Connecting to an Internet service provider using the telephone network. The telephone network’s switches are used to complete the connection.
Digital Subscriber Line	High-speed communication facilities which uses a telephone company’s existing local loops to connect end users to Internet service providers.
Downstream	In data networks, the transmission of information from the serving computer to the client computer.
DSL	Digital Subscriber Line
Edge Provider	An entity that supplies Internet content or services. Some edge providers are for-profit (Google, Facebook, <i>New York Times</i> ), other are not-for-profits or private citizens.

End-to-End Principle	In a data communications network, application-specific functions ought to reside in the host computers of a network rather than in intermediary nodes – provided they can be implemented "completely and correctly" in the end hosts.
Forbearance	An explicit policy of the FCC refraining from imposing certain aspects of its authority. Typically implemented by reference to sections of the Communications Act.
Host Computer	A computer that provides content or services over the Internet. (See also "Server".)
Interconnection	The process of connecting two or more telecommunications networks.
Internet	The global network of networks that enables data communications using the TCP/IP protocol.
Internet Services	Services provided with the Internet such as e-mail, World Wide Web (WWW), streaming audio and video, social media, etc.
Internet Service Provider	A company that enables end-users' ability to connect with the Internet. May also provide some Internet Services like e-mail or web hosting.
ISP	Internet Service Provider
Mbps	Megabits per second. A measure of data transmission speed. Millions of bits per second.
Modem	A device that allows digital computers to communicate over analog networks.
Open Network Architecture	An FCC policy that required that telephone companies provide open access to their network technology for use by other firms.
Remote Computer	A computer or device that uses information provided by host computers. Personal computers, tablets, and smartphones typically are remote computers. (See also, "Client.")
Server	A computer that provides content or services over the Internet. (See also "Host Computer.")
Title I	The section of the federal Communications Act that provides general FCC authority over communications by wire and radio. Title I authority does not govern issues such as discrimination, service quality, or rates.
Title II	The section of the federal Communications Act that governs common carriers. Title II provides authority for the FCC to govern issues such as discrimination, service quality, and price.
TCP/IP	Transmission Control Protocol/Internet Protocol. Allows computers with diverse operating systems and hardware to communicate over computer networks.
Upstream	In data networks, the communications channel that a client uses to send information to a server, or to other clients.
Web Hosting	An Internet service that allows a user to establish and maintain a web page.