

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act)	GN Docket No. 09-47
)	
National Broadband Plan for our Future)	GN Docket No. 09-51
)	
Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act)	GN Docket No. 09-137
)	
Comment Sought on Defining “Broadband,” NPB Public Notice #1)	DA 09-1842
)	

COMMENTS OF ALLIED FIBER

Hunter Newby

Allied Fiber, LLC
601 Lexington Avenue
59th Floor
New York, NY 10022
(646) 732-4300

August 31, 2009

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act)	GN Docket No. 09-47
)	
National Broadband Plan for our Future)	GN Docket No. 09-51
)	
Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act)	GN Docket No. 09-137
)	
Comment Sought on Defining “Broadband,” NPB Public Notice #1)	DA 09-1842
)	

COMMENTS OF ALLIED FIBER

Allied Fiber, LLC (“Allied”) pursuant to the *Public Notice* released on August 20, 2009^{1/}, hereby files these comments regarding the definition of “broadband” for purposes of the Federal Communications Commission’s (“FCC” or “Commission”) development of a National Broadband Plan (“NBP” or “Plan”) pursuant to the American Recovery and Reinvestment Act of 2009.

The FCC should define broadband based on the quality of the user’s experience. The goal should be that networks are sufficiently robust to maximize the user experience with whatever application is being utilized. Thus, for applications requiring real-time

^{1/} *Comment Sought on Defining “Broadband,” NPB Public Notice #1*, Public Notice, GN Docket Nos. 09-47, 09-51, 09-137, DA 09-1842 (rel. Aug. 20, 2009) (“*Public Notice*”).

interaction, the network must be able to provide the user with what he or she perceives to be an instantaneous response, as if the interaction were in real life rather than intermediated by networks. Metrics can be established to ensure such response times, but the metrics themselves should not be the goal as they are subject to change as applications and user patterns change. A user-based definition requires assessment of performance on an end-to-end basis across all networks in the chain. In order to reduce the number of network hops, which invariably reduces response times, carriers should be required to collocate in the major carrier hotels and core network interconnection points in the United States where they can directly connect with application providers.

I. Broadband Should Be Defined In Terms of the User’s Experience

Allied believes that broadband should be defined in relation to the quality of the user’s experience. The Commission’s goal should be to ensure that broadband networks have the capability, in terms of infrastructure, to provide the speed and quality required to maximize the user’s experience with respect to whatever application the user desires to access. This means that, much as telephone networks are designed to accommodate peak loads, broadband networks must be designed to meet user expectations regarding the most demanding applications. For applications designed to provide real time communication, for example, this would mean a combination of throughput and quality, as measured by latency, jitter and other recognized metrics, sufficient for the consumer to perceive instantaneous responses.

Utilizing user experience to define broadband is not wholly subjective. AdTran, for example, has suggested that an end-to-end response time of about 0.1 second “is

about the limit for having the user feel that the system is reacting instantaneously.”^{2/} The limitations of user perception can, in turn, be translated into a set of interrelated performance objectives measured in terms of response time necessary to reach the desired experience. The response time is a factor of both bandwidth or speed, and delay. Both variables are important. Excessive latency can preclude achieving a desired response time no matter how much bandwidth is available.^{3/} In turn, insufficient bandwidth can preclude achieving a desired response time because the required concomitant limitations on latency would be unachievable from a practical standpoint.

A definition based on the end user experience is inherently self-adjusting. The quality of the user’s experience is the goal, not a specific set of performance metrics. Although preferred performance objectives can be established for today’s applications, it would be a mistake to utilize those objectives, rather than the desired end user experience, as the goal. This is because the performance objectives will necessarily change over time with the development of new applications and overall increased volumes over the networks. An example is set forth in a recent presentation at an FCC workshop. There it was postulated that an acceptable average threshold for today’s mix of applications would be 3.75 Mbps downstream, 1 Mbps upstream and a latency of 95 ms. These metrics will, however, be insufficient for tomorrow’s uses of broadband, estimated to require 11.25 Mbps downstream, 5 Mbps upstream and a latency of 60 ms.^{4/} None of these specific speed and latency objectives should define broadband.

^{2/} See AdTran, *Defining Broadband: Network Latency and Application Performance*, White Paper, attached to Letter from Stephen L. Goodman, Counsel for AdTran, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 09-51 (filed June 23, 2009) (“*AdTran White Paper*”).

^{3/} *AdTran White Paper*, at 12.

^{4/} See Robert Pepper, Cisco Vice President Global Technology Policy, National Broadband Plan FCC Workshop Presentation, *International ICT and Broadband Development*, available at:

II. Actual Performance Must Be Measured on an End-to-End Basis

Defining broadband in terms of the user's experience requires that networks meet performance standards in the real world, not merely as-advertised or at theoretical speeds. Moreover, consumers themselves should be able to test actual response times. The government's plan could include an all-purpose website--a government "ping site"--where consumers can readily test their network provider's end-to-end performance with respect to any application.

The quality of the end user's experience also requires an end-to-end assessment. Access networks and core networks must collectively be able to provide sufficient throughput and quality of service to meet the requisite overall response time needed to meet the user experience goal. Performance of each component should be assessed separately. Where there is a last mile access provider, a separate middle mile provider and yet another network providing backbone, each network's performance should be assessed. Each of these separate components requires some propagation time, but the time allocated to each should not collectively exceed the required response time. Each component must be accountable for meeting its allocated response time.

This requirement can most effectively be met and managed by each network being required to have its own dedicated network presence in one of the major Internet interconnection facilities in the U.S. Such a presence could reduce the time needed to resolve network problems and enable the network provider to better manage latency, jitter, and other sources of degradation.

http://www.broadband.gov/docs/ws_int_lessons/ws_int_lessons_pepper.pdf (citing Oxford Said Business School global study of broadband quality) (rel. Aug. 18, 2009).

CONCLUSION

The Commission should define broadband based on the quality of the end user's experience as described herein. Performance should be measured on an end-to-end basis and each network involved must be accountable for its segment of the round trip.

Requiring providers to collocate in one of the major Internet interconnection points and establish a dedicated link to that equipment will also contribute to more effective and efficient broadband network management.