

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC**

In the Matter of)	
)	
Further Inquiry into Two Under-Developed Issues)	GN Docket No. 09-191
)	
In the Open Internet Proceeding)	WC Docket No. 07-52
)	
)	

COMMENTS OF CLEARWIRE CORPORATION

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I. EXECUTIVE SUMMARY

Clearwire files these comments in response to the Commission's Further Inquiry¹ in the Open Internet proceeding, which seeks comment concerning the relationship between open Internet protections and "specialized services," and the application of open Internet rules to mobile wireless Internet access services, which may have certain unique characteristics. Clearwire supports the Commission's effort to craft an approach that will preserve a free and open Internet, and provide certainty to applications developers, all while maintaining incentives for innovation and investment in broadband infrastructure. This is a difficult balance to strike, but one that is critical to the growth and development of the nation's broadband infrastructure and Internet ecosystems.

Clearwire's adoption of an open technology platform and business model shows that it is feasible to apply principles guiding open Internet considerations to both wired and wireless services. It is indisputable however, that due to the unique characteristics of spectrum, the rules of the road governing what constitutes reasonable network management are different for wired and wireless services. The basic limitations associated with managing a scarce spectrum resource dictate a different network topology and more robust network management to deliver the best experience for the greatest number of network users. As the Commission has in the past, it should continue to acknowledge and accommodate the differences between wired and wireless platforms.

As noted in previous comments, Clearwire continues to urge the Commission proceed cautiously before prescribing explicit rules for how wireless broadband providers should develop

¹ See *Further Inquiry into Two Under-developed Issues in the Open Internet Proceeding*, GN Docket N0. 09-191, WC Docket No. 07-52, Public Notice (rel. Sept. 1, 2010) (*Public Notice*).

their network management strategies. Inflexible rules could stem the development of new technologies and innovative business models such as Clearwire's. Clearwire proposes that as a threshold principle, carriers should offer full transparency to customers, applications, content and service providers about their network management practices, and how those practices may affect their experience. Furthermore, the Commission should primarily restrict network management practices that appear to have an element of anti-competitive intent. At a minimum, however, "no blocking" seems to be a general proposition that all parties in these proceedings can agree upon.

Finally, Clearwire also believes that through creation of a meaningful "specialized services" category, the Commission can ensure that network operators have the flexibility to offer new and innovative services to customers. Clearwire posits that the Commission should define "specialized services" as those provided to customers pursuant to specific quality of service ("QoS") protocols critical to the operation of that service. This service may run side-by-side with a carrier's broadband Internet access service, but has distinct attributes or requirements that demand QoS and specialized network management in its provision, such as voice traffic, which must be provided via an uninterrupted stream. By adopting an approach that keeps all forms of broadband Internet connectivity as non-discriminatory as possible, while maintaining flexibility for specialized services with unique technical attributes, the Commission will create a more level regulatory and legal playing field, one that is legally sustainable, and one that will age well alongside a rapidly changing technology marketplace.

II. BACKGROUND

Clearwire operates open, Internet-Protocol ("IP") 4G wireless broadband networks in markets across the United States and Europe. These networks provide communities with high-speed residential and mobile Internet and interconnected voice over Internet protocol (VoIP) services. As of October 2010, Clearwire has nearly two million wireless broadband subscribers

and is rapidly deploying 4G broadband wireless service that utilizes the WiMAX technology standard in new markets and converting its pre-WiMAX markets to the 4G standard.² Clearwire has announced that by the end of 2010, its 4G WiMAX network is expected to be available in more than 80 markets covering up to 120 million people.³

Since its inception, Clearwire has been committed to operating an open network that accommodates its subscribers' choice of devices and applications. Because WiMAX technology is based on an open technology platform, device manufacturers are free to design various WiMAX compliant devices that can be accommodated on the Clearwire network so long as the device is compatible with and not harmful to its WiMAX network. Furthermore, Clearwire encourages subscribers to download and use any software applications, content, or services they desire, subject only to reasonable network management practices and law enforcement and public safety considerations. Clearwire lets its customers make the critical decisions regarding what products, devices and applications they want to use with the company's service.

In addition to extending an open network philosophy to its customers, Clearwire has positioned itself as a "network of networks," offering a wholesale model to other communications network providers. Clearwire has not only launched its own successful CLEAR service, but also serves as the underlying 4G network of Sprint Nextel, Comcast and Time

² CLEAR 4G service is currently available in 56 markets across the United States, including: Minneapolis/St. Paul, Minn.; Nashville, Tenn.; Boston, Mass.; Orlando, Daytona Beach and Jacksonville, Fla.; Providence, R.I.; Wilmington, Del.; Grand Rapids, Mich.; Syracuse and Rochester, N.Y.; Atlanta and Milledgeville, Ga.; Baltimore, Md.; Boise, Idaho; Chicago, Ill.; Las Vegas, Nev.; St. Louis and Kansas City, Mo.; Pittsburgh, Philadelphia, Harrisburg, Reading, Lancaster and York, Pa.; Charlotte, Raleigh, and Greensboro, N.C.; Honolulu and Maui, Hawaii; Seattle, Tri-Cities, Yakima and Bellingham, Wash.; Salem, Portland and Eugene, Ore.; Merced, Visalia, Modesto and Stockton, Calif.; Dallas/Ft. Worth, Houston, San Antonio, Austin, Abilene, Amarillo, Corpus Christi, Killeen/Temple, Lubbock, Midland/Odessa, Waco and Wichita Falls, Texas; central Washington, D.C.; Richmond, Va.; and Salt Lake City, Utah.

³ By the end of 2010, CLEAR 4G will also be available in major metropolitan areas such as New York City, Los Angeles, the San Francisco Bay area, Denver, Miami, Cincinnati and Cleveland.

Warner Cable. These carriers couple Clearwire's 4G service with their own facilities-based offerings to provide consumers with a varied package of choices among 4G network providers and service packages in those markets where Clearwire has deployed its network. For example, Sprint Nextel launched the country's first tri-mode 3G/4G/WiFi handset by combining its facilities-based 3G services with Clearwire's 4G offerings. This device, the HTC EVO™, is the first 3G/4G phone, and includes features such as a 4.3-inch screen, dual 8MP video camera, a front-facing 1.3MP camera, a HDMI output jack and a 1GHz processor. It has simultaneous voice and data capability in 4G or Wi-Fi coverage areas, enabling Web surfing and more during conversation, and has a built-in mobile hotspot for up to eight Wi-Fi enabled devices.⁴ As evidenced by the launch of the HTC EVO™, Clearwire's innovative dual-pronged wholesale and retail strategy expands the company's reach to potential customers and is an efficient and effective way of achieving a multiplier effect with regard to the introduction of advanced wireless broadband competition to the marketplace.

III. DISCUSSION

a. The Commission's Principles, if Carefully Tailored, are Generally Feasible for Wireless Broadband Networks

Clearwire's consistent adherence to the open Internet principles in crafting its network management policies demonstrates that they are generally feasible for wireless broadband networks.⁵ As the Commission acknowledges in the *Open Internet NPRM*, however,

⁴ See "HTC EVO™ 4G Breaks Sales Records for Sprint on Launch Day; America's First 4G Phone is a Hit with Customers," June 8, 2010, *available at* http://newsreleases.sprint.com/phoenix.zhtml?c=127149&p=irol-newsArticle_newsroom&ID=1436066. Sprint has also since launched a second 4G handset, the Samsung Epic. See "Second 3G/4G Phone, Samsung Epic 4G, Launches with One of the Best First-Day Sales for Any Sprint Device," *available at* http://newsroom.sprint.com/article_display.cfm?article_id=1620.

⁵ Clearwire's 4G network, from its inception, has been designed specifically for the provision of advanced broadband services. The Commission may find it less technically feasible

“technological, market structure, consumer usage and historical regulatory differences between different Internet access platforms may justify differences in *how* we apply the Internet openness principles . . .”⁶ Clearwire urges the Commission to recognize that it should carefully construct rules implementing its open Internet policies in a manner that recognizes every step along the way the differences between wireless, particularly mobile, and other broadband network platforms.

It is an intricate process to support broadband services over a mobile wireless broadband network. In mobile broadband networks, spectrum assets are inherently shared, creating a greater potential for network congestion than is found with a wireline broadband network, where each end user has dedicated access. The same wideband radio channel must be shared among many user sessions that may each involve many different types of data streams and protocols. For instance, some applications require time sensitive, small packet data transmissions while other applications require long, error sensitive large packet data streams. In addition, throughput, latency, and transmission errors vary much more widely over a mobile network because of constantly fluctuating radio signal conditions and extensive digital radio processing. Additionally, wireless network congestion is often cell site or sector specific, which may require appropriate traffic management during periods of heavy network utilization to maintain a good experience for all users on the network. To accommodate technical differences among various network technologies, the Commission should ensure that its application of any proposed new

to apply open Internet principles to earlier generations of wireless networks that were originally voice-centric, with less overall bandwidth.

⁶ *Preserving the Open Internet, Broadband Industry Practices*, Notice of Proposed Rulemaking, GN Docket No. 09-191, WC Docket No. 07-52, 24 FCC Rcd 13064 (2009) at ¶ 154 (*Open Internet NPRM*).

rules is as nimble as possible and that those same rules are crafted in a technology agnostic manner. So as Clearwire emphasized in its comments regarding broadband reclassification, the obvious differences between wireless and wired broadband may not be relevant with regard to the overarching framework of Open Internet principles applicable to the broadband Internet providers writ large.⁷ On the other hand, these differences are certainly relevant to the question of whether network management techniques that are inherently reasonable in a wireless environment are more questionable in a wired scenario.⁸ The Commission should, therefore, permit wireless carriers considerable latitude in utilizing reasonable network management techniques that permit them to make the most efficient and effective use of their scarce spectrum resource.

b. The Commission Should Rely on Transparency as a Threshold for Examining Reasonable Network Management Solutions and Detecting Anti-Competitive Behavior

Clearwire asks that the Commission proceed cautiously before prescribing explicit rules for how network providers—especially wireless broadband providers—may develop and implement their network management strategies. Overly rigid rules could upset the development of new technologies and innovative business models such as Clearwire’s. As a threshold principle, carriers should offer full transparency to customers, applications, content and service providers about their network management practices, and how those practices may affect their experience. The Commission should only restrict strategies or practices that appear to have an element of anti-competitive intent—for example, if the practice is designed principally to favor

⁷ See Comments of Clearwire Corporation, GN Docket No. 10-127 (filed July 15, 2010) at 6.

⁸ For example, the Commission may consider the competitive landscape in adopting rules, applying different rules based on competitive or “market structure” differences. See, e.g., *Open Internet NPRM* at ¶ 154, *infra* note 19.

carrier-provided services over other services, the practice should be subject to particular scrutiny. At a minimum, however, “no blocking” seems to be a general proposition that all parties in these proceedings can agree upon. Customers should be able to access any legal Web site, content or application without interference from their service provider.

There are numerous business and technical reasons for network providers to occasionally employ pro-consumer strategies that do not unequivocally treat every bit that traverses their networks in precisely the same manner. For wireless network providers, in particular, network management cannot be divorced from spectrum management. As the Commission itself has repeatedly acknowledged, spectrum is never an unlimited resource⁹ and the ability to use reasonable network management techniques is inescapably a vital component to running a functional wireless network. In addition, a strategy is applied in a neutral and manner, and a network provider fully describes to its customers how, when, and why that strategy may impact their usage, then the practice should be presumed reasonable unless there is evidence of anti-competitive motivation or intent.

For instance, a customer may choose to download an episode of his or her favorite television show from a popular online video service provider, such as Hulu.¹⁰ Once that customer initiates the download, his or her network provider may choose to prioritize that application for that customer so that he or she can enjoy an uninterrupted stream of the episode. The prioritization of the episode may have the unintended consequence of limiting the bandwidth of other subscribers in the same geographic area, who may have attempted to download a video or other application following the initial customer’s download. The network provider would

⁹ See *Comment Sought on Spectrum for Broadband*, GN Dockets 09-47, 09-51, 09-137, *NBP Public Notice #6*, (rel. Sept. 23, 2009); see also *Data Sought on Uses of Spectrum*, GN Docket Nos. 09-47, 09-51, 09-137, *NBP Public Notice #26*, (rel. Dec. 2, 2009), among others.

¹⁰ See http://www.hulu.com/about/product_tour.

then attempt to perform the same prioritization for the next customer in line after the initial customer's download is complete. This "first come, first served" method can be viewed as both "reasonable," and "discriminatory" at the same time. However, its intent is purely in the interest of maximizing the consumer experience.

If in the name of treating all data bits equally, such a policy is prohibited without exception, and the network provider is unable to perform sufficient network management, via a "discriminatory" practice or otherwise, all subscribers in that sector who attempt to download a video stream will experience slowed, inconsistent quality when attempting his or her particular download. On the other hand, if this "first come, first served" practice is disclosed, an informed subscriber may support the policy as providing an overall better customer experience—but at least the subscriber will have a chance to vote with his or her feet, and provide some feedback to the market. As discussed above, the unintended consequences flowing from an overly rigid set of regulations would be particularly harmful for mobile wireless broadband network providers. Mobile wireless broadband providers face unique challenges when attempting to efficiently and effectively manage their networks to best serve their customers, and allow those customers to fully enjoy the robust, next-generation services mobile broadband networks are capable of providing.

c. Clearwire Supports the Commission's Proposal to Create a Category of Specialized Services.

Clearwire applauds the Commission for recognizing that certain categories of services may need to be excluded from its proposed open Internet principles, and inquiring how or why those services may be different. Clearwire agrees that there are categories of specialized services that "may provide consumer benefits, including greater competition among voice and

subscription video providers, and may lead to increased deployment of broadband networks.”¹¹ The Commission also asks whether allocation of available bandwidth for specialized services is different and/or critical, whether these services should be uniquely classified by the Commission, and what policies, if any, should apply to these services.¹² Clearwire believes that the allocation of bandwidth to particular categories of specialized services, such as voice and certain types of video applications, is crucial from a business and technical standpoint. For example, Clearwire’s enterprise and wholesale customers demand specialized services, supported by a QoS assurance, as a service offering that is distinct from broadband Internet access services.

In crafting a category of specialized services, the Commission asks how it can address concerns that specialized services will create an exception that permits carriers to bypass or supplant open Internet protections or create an opening for anti-competitive conduct. The Commission outlines six general policy approaches that could be employed alone or in combination to address these concerns.

First, the Commission suggests that “definitional clarity” of what constitutes a specialized service could help distinguish specialized services for broadband Internet access services. To ensure that specialized services are accommodated, the Commission should carefully craft an evolving definition adaptable enough to include future specialized services along with those services, such as voice and video, which are currently deployed and explicitly recognized by the Commission in its *Open Internet NPRM*.¹³ Crafting a broad definition will allow network providers to treat novel or unique services, which may need distinct treatment from broadband

¹¹ *Open Internet NPRM* at ¶ 148.

¹² *Id.* at ¶¶ 151-153.

¹³ *See id.* at ¶ 148

Internet access services, as specialized services free from rules that may hinder the ability of a network provider to make them available.

Clearwire suggests that the Commission define a specialized service as one that is provided to customers, including wholesale customers, pursuant to specific QoS protocols critical to the operation of that service. This service may run side-by-side with a carrier's broadband Internet access service, but has distinct attributes or requirements that demand QoS and specialized network management in its provision, such as voice traffic traversing a wireless network. To provide acceptable QoS to these services, a network must be able to identify and combine many different types of traffic from many different users without compromising the performance of any of the different user applications. On a mobile broadband network, this must be done for any number of services at any given time and in any given location. Therefore, the Commission's definition and of specialized services should be broad enough to ensure that current and future services requiring specialized QoS or allocation of significant bandwidth for their successful provision will be included in that definition.

Second, the Commission asks for comment on whether "truth in advertising" is warranted, prohibiting broadband providers from marketing specialized services as broadband Internet access services or as a substitute for such service, and require providers to offer broadband Internet access service as a stand-alone service, separate from specialized services.¹⁴ The Commission also asks whether it should allow broadband providers to offer only a limited set of new specialized services or whether it should require carriers to set aside guaranteed capacity for broadband Internet service.¹⁵ As Clearwire discusses above, it endorses the Commission's use of transparency as a threshold for consideration of whether a carrier's conduct

¹⁴ See *Public Notice* at 3.

¹⁵ See *id.* at 4.

is reasonable and “truth in advertising” would certainly be an important element of transparency. That being said, Clearwire does not believe that the Commission needs to bolster existing “truth in advertising” requirements with regulations crafted specifically for the offering of specialized services. There is no evidence that existing “truth in advertising” requirements would not be sufficient.

Further, the Commission should not pursue proposals that require it to prejudge an authorized mix of services and offerings of service providers. Instead, in the interest of fostering innovation and investment, the Commission should pursue policies that encourage wide variety among carriers pursuing different market segments and business plans. For example, Clearwire has shifted its principal focus to acting as a “network of networks” for other wireless carriers after initially launching as a wholly retail service provider. In addition, any limited list of permitted specialized services is likely to be outdated before it is published in the Federal Register. New Internet based services are being developed at a breakneck pace and it would be difficult, if not impossible, for the Commission to correctly guess the list of specialized services that will be necessary to serve present and future needs.

Clearwire also believes that a mandate that reserves “guaranteed” capacity for broadband Internet access services would be a ham-fisted way of addressing a concern that today is only theoretical.¹⁶ In fact, the proposal would turn the debate on its head by setting QoS-like criteria for the offering of “best efforts” broadband Internet access service. Wireless networks, in particular, would be hobbled by a regime that inhibits their ability to engage in reasonable network management techniques simply because they have chosen to offer a mix of specialized and broadband Internet access services. In the interest of continuing to drive additional private

¹⁶ See *Public Notice* at 4.

investment in networks, the Commission should continue its long-standing practice of permitting carriers to exercise their business judgment regarding the mix of service offerings that are likely to be most desirable to customers and support their business plans.

The Commission also asks whether it should require “non-exclusivity” with regard to commercial arrangements with a vertically-integrated affiliate or a third party for the offering of specialized services that would require that the specialized services be offered on the same terms to other third parties.¹⁷ Clearwire appreciates the concern that the risk of anti-competitive conduct is enhanced when carriers are entering into commercial arrangements with a vertically-integrated affiliate. Clearwire agrees that those types of arrangements should be subject to particular scrutiny and perhaps, if a pervasive problem is evident, be subject to the ban on exclusive dealing under consideration. In the absence of anticompetitive intent, there does not appear to be sufficient reason for the Commission to interfere with arms length contractual arrangements among carriers and their customers.

IV. CONCLUSION

In conclusion, Clearwire supports the Commission’s comprehensive inquiry into the best means of preserving the open Internet while promoting continuing innovation and investment in broadband Internet access platforms. Clearwire also urges the Commission to carefully consider particular facts and circumstances in crafting rules that are clear, yet flexible, to ensure that the still nascent broadband industry will meet its full potential. Clearwire respectfully submits the foregoing comments and asks that the Commission consider the views expressed herein.

¹⁷ See *Public Notice* at 4.

Respectfully submitted,

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