December 22, 2014

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Via Electronic Filing

Re: GN Docket Nos. 10-127, 14-28, MB Docket No. 14-57

Dear Ms. Dortch:

Please accept the letter below as additional explanation of our recommendations already in this docket for mitigating consumer harms relating to interconnection points into the last-mile broadband access networks.[1]

I. Introduction

The Open Technology Institute at New America ("OTI") supports the Commission's efforts to promulgate rules that preserve the Internet's vital role as a force for innovation, economic growth, and free expression. In previous comments, OTI has argued for robust rules that protect consumers in a comprehensive manner, encompassing mobile broadband and the exchange of traffic between last-mile Internet Service Providers ("ISPs") and the rest of the Internet. In these comments, OTI elaborates on the acute need for rules that address the interconnection points at which access ISPs exchange traffic with transit service providers and edge providers. Recent disputes and subsequent detailed analysis demonstrate that interconnection abuse is an immediate and serious threat to consumers and the open Internet. The Commission must act expeditiously to address this ongoing problem.

Interconnection points between transit and access providers are the primary gateway to the customers of last-mile ISPs, making them an enormously vital—and vulnerable—component of the Internet. The recent dispute between Netflix and the nation's four largest ISPs demonstrated how these gateways can be manipulated to extract payments that functionally

[1] *See* Comments of the Open Technology Institute at New America, GN Docket No. 14-28, GN Docket No. 10-127 (July 17, 2014); Reply comments of the Open Technology Institute at New America, GN Docket No. 14-28, GN Docket No. 10-127 (September 15, 2014); Notice of Ex Parte Communications, Open Technology Institute at New America, GN Docket Nos. 10-127, 14-28 (October 30, 2014); Notice of Ex Parte Communications, Open Technology Institute at New America, GN Docket Nos. 10-127, 14-28, MB Docket No. 14-57 (November 18, 2014).

resemble the paid prioritization fees and blocking practices that the Commission seeks to prohibit within last-mile networks.

Accordingly, the Commission's network neutrality rules must encompass the full scope of last-mile networks—including their entry points. Failure to protect these entry points would effectively sanction a loophole in any network neutrality regime, as well as ignore a crucial segment of the Internet that is ripe for abuse. It is appropriate and necessary for the Commission to play an oversight role in this space.[2]

OTI recommends a three-pronged approach to ensure that ISPs do not continue to use these entry points as a mechanism for extracting tolls and degrading their customers' service. First, the Commission should create a measurement regime to analyze congestion along critical interconnection points. Second, the Commission should enhance the transparency rule to include interconnection practices. Third, the Commission should ban fees for access to last-mile networks.

II. Interconnection abuse is not a prospective harm; it is an immediate and serious threat to consumers and the open Internet.

Interconnection operates in a strikingly opaque landscape. All of the traffic to and from a last-mile ISP customer travels through interconnection ports, yet few publicly available tools exist to measure activity at these critical junctures. Furthermore, business practices regarding interconnection are rarely publicized and often subject to non-disclosure agreements.[3] This creates an environment in which anti-consumer behavior can occur without detection.

The consequences of this lack of oversight have become clear in the wake of disputes between content providers, transit networks, and the nation's largest ISPs. Recent analysis of data collected by the Measurement Lab—a public, open platform for Internet measurement[4] —confirmed that millions of ISP customers were caught in the middle of these disputes in 2013 and 2014 as their service degraded without explanation.[5] Consumers had no reliable way to know that interconnection congestion was causing the degradation. The ISPs were not required to inform anyone that prolonged disputes were happening, nor that the disputes were harming millions of Internet users.[6] Moreover, the congestion appears to have been intentionally created to pressure a company to pay more money. Millions of people were swept up as collateral damage in a dispute to which they were bystanders; telecommuters trying to connect to their

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[2] President Obama echoed this point in his recent statement about net neutrality. *See* "Net Neutrality: President Obama's Plan for a Free and Open Internet," *The White House*, November 10, 2014, http://www.whitehouse.gov/net-neutrality (accessed December 19, 2014) ("The connection between consumers and ISPs — the so-called 'last mile' — is not the only place some sites might get special treatment. So, I am also asking the FCC to make full use of the transparency authorities the court recently upheld, and if necessary to apply net neutrality rules to points of interconnection between the ISP and the rest of the Internet.").

[3] *See* "ISP Interconnection and its Impact on Consumer Internet Performance," *Measurement Lab*, October 28, 2014 ("M-Lab Report") ("[W]hile we can infer that performance degradation is interconnection-related, we do not have the contractual details and histories of individual interconnection agreements.").

[4] For more information about Measurement Lab, see http://www.measurementlab.net/.

[5] M-Lab Report at 4.

[6] "Beyond Frustrated: The Sweeping Consumer Harms as a Result of ISP Disputes," *Open Technology Institute*, November 2014 ("Beyond Frustrated"). *See also* Susan Crawford, "How to Fight Telecom Gameplaying," *Medium*, October 30, 2014, https://medium.com/backchannel/how-to-fight-telecom-gameplaying-aa3765edc385 (accessed December 19, 2014).

employers, businesses trying to conference with their customers, and online video subscribers trying to access the content they paid for all experienced massive service degradation.[7]

Irrespective of which parties to this dispute were right or wrong, one thing is clear: consumers were left in the dark as they were unwittingly used as pawns in a business conflict. This outcome should not be acceptable. The Commission's current oversight regime clearly failed consumers during this episode, and it should be enhanced to protect consumers from further harm.

III. The Commission should implement an interconnection measurement and oversight regime as part of the Open Internet proceeding.

Given the ongoing abuse at last-mile interconnection points, the Commission should act expeditiously to implement an oversight regime that sheds light on harmful conduct and proscribes abusive practices. Consumers need the Commission to exercise its oversight authority in this space. The oversight and measurement regime should be structured to ensure that ISPs do not continue to use interconnection as a mechanism for extracting tolls and degrading their customers' service. This objective supports the goals of the Open Internet proceeding.[8] Addressing interconnection abuse in a separate proceeding is unnecessary and would only serve to delay much-needed action against an active threat. To adequately protect consumers and the open Internet, OTI recommends a three-pronged approach based on public measurement tools, targeted disclosure requirements, and light-touch rules.

1. The Commission should implement an ongoing, robust measurement regime that identifies and evaluates problematic activity at the point of last-mile interconnection.

As part of its current investigation of interconnection practices, the Commission should implement an ongoing, robust measurement regime that evaluates problematic network management practices at the point of interconnection between transit providers and last-mile ISPs.

The ideal measurement regime would include the following characteristics:

- A focus on measuring the technical indications of congestion levels (throughput, latency, and packet loss) in interconnection paths between the end-user and a wide footprint of transit networks;
- Monitoring of interconnection based on measurement of performance to specific transit networks, rather than the performance of specific Internet applications. This approach would give the Commission more granular data about the specific points of degradation for end users, be more reliable in methodology, and avoid a situation where a new test must be developed in order to even begin to collect data applicable to subsequent issues with future services;
- Use of a nationwide measurement endpoint platform with server placements that are geographically dispersed across major markets and key points of interconnection;

[7] Beyond Frustrated at 4. *See also* Susan Crawford, "The Cliff and the Slope," *Medium*, October 30, 2014, https://medium.com/backchannel/jammed-e474fc4925e4 (accessed December 19, 2014).
[8] *Protecting and Promoting the Open Internet*, GN Docket No. 14-28 (May 15, 2014).

- Placement of multiple measurement endpoints in the same geographic area connected to distinct transit networks for comparative data within key markets;
- Measurements that are conducted against a diverse set of interconnection points based on location, research plans, and regulatory interest in order to cover a wide range of interconnections, including those that may not previously have been thought to be congested;
- Release of all data sets to the public in raw form and available for independent research as quickly as possible after the data is collected[9];
- Use of public, open source analytic tools and metrics with fully documented methodology and developed based on engagement with the research community;
- Public access to the measurement client, preferably through client software, to provide opportunities for comparative data collection and consumer education.

The Commission could easily adopt M-Lab's existing model for measurement of traffic across interconnects. M-Lab provides both a nationwide platform and a demonstrated and recognized track record, including existing integration into the Commission's measurement efforts. Finally, the platform benefits from the critical characteristics described above, including an open data set, open source tools, and the ability for anyone in the research, business or regulatory community to re-test or replicate results to verify that any measurement represents good science. With respect to its existing interconnection research, M-Lab has also established a reliable methodology that has demonstrated success in documenting interconnection congestion and has released a set of tools to process the raw measurements from M-Lab's extensive dataset (Telescope) and make the information easy to understand (Observatory).

The following additions would significantly enhance M-Lab's current successful measurement: additional measurement points in transit networks, beyond the expansion currently happening independently within the project; measurement points located within the access ISPs, to provide comparative performance data that will complement the off-network endpoints that are currently used by M-Lab; and deployment of client tests like NDT alongside other tests, such as testing within SamKnows Whiteboxes. The Commission could therefore include a NDT-based measurement process and platform that M-Lab would provide and support, which would allow the Commission to measure against different interconnections on a recurrent basis and further augment M-Lab's large and diverse points of measurement. In return, the Commission's measurement would benefit from a well-supported methodology, comparative data from a highly-deployed test, and mature and open tools for extracting the data from M-Lab.

Once the Commission has established a measurement regime and the tools to understand and address consumer harms proactively and effectively, the Commission will also have the ability to implement a triggering mechanism that notifies when the consumer experience drops below certain pre-determined thresholds for capacity, latency, loss, or other performance metrics. What the Commission *does* with the data is as important as the data collection itself. Once the Commission identifies a sustained, underperforming network, the Commission could initiate a

[9] M-Lab data is generally fully available within days of collection, and the project is taking steps to reduce this turnaround time even further.

proceeding to fully examine the problem and work with relevant actors to ensure that those consumer harms are ameliorated immediately.

Finally, the Commission should, in collaboration with M-Lab and/or other stakeholders or on its own, release a regular full analysis of the data it collects, similar to the technical report that M-Lab released this fall. This detailed analysis would be distinct from the more frequent release of raw measurement data that we recommend above.

2. **The Commission's transparency rule should include disclosure of network management practices concerning interconnection points between transit and/or edge providers and last-mile access providers.**

The Commission should enhance its proposed transparency rule in a manner that enables detection of network congestion that degrades Internet performance. The current rule[10] is not equipped to achieve this goal; it requires broadband providers to disclose network management practices, but lacks specificity, resulting in disclosures that are of little utility to anyone trying to assess whether ISPs are actually delivering the service that they sold to their customers.[11] With greater specificity, this rule could strengthen the Commission's ability to assess whether the reasonable and timely deployment of broadband services is being achieved.

Recognizing that the relationship between transit providers and ISPs is currently one of private carriage rather than common carriage, OTI does not suggest that the Commission necessarily collect sensitive contractual information. However, relatively benign information about interconnection practices can provide the Commission with valuable context for analyzing the data collected by the measurement regime described in recommendation 1.

First, the date that an interconnection agreement was reached provides important context for analysis of sustained, anomalous traffic patterns. Companies are currently not required to disclose when such deals are reached, or if they exist at all. The Commission should make such disclosures mandatory. Second, last-mile ISPs should be required to disclose when they augment capacity at an interconnection point—and when they decide *not* to augment. Augments can alleviate port congestion, but the decision to forgo an augment can *create* congestion. This becomes a blunt and very effective tool for ISPs seeking to extract access fees. Augment disclosures would help inform the Commission's analysis of measurement data, and may also deter ISPs from engaging in such conduct.

These specific disclosure requirements can be used in a targeted manner to detect congestion and potential disputes. They can also provide the evidentiary basis for the Commission to initiate further investigation of specific practices or incidents.

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[10] *Preserving the Open Internet*, GN Docket No. 09-191, WC Docket No. 07-52, Report and Order, 25 FCC Rcd 17905 at para. 54 ("Open Internet Order").

[11] Beyond Frustrated at 21. *See also* Open Internet Order at para. 60 ("A key purpose of the transparency rule is to enable third-party experts such as independent engineers and consumer watchdogs to monitor and evaluate network management practices….").

3. The Commission should ban access tolls into last-mile networks.

Interconnection points are susceptible to access tolls, a particularly abusive form of payment that can be extracted by ISPs as a fee for accessing their last-mile networks. The Commission should ban them in the proposed network neutrality rules, in addition to fees for prioritized or enhanced delivery of content. A last-mile ISP should not be allowed to leverage its terminating access monopoly to demand a fee simply for access to its customers.

Some costs related to reasonable technical upgrades at interconnection points may be necessary to maintain robust consumer broadband access. However, these costs are most appropriately borne by each interconnecting party for the maintenance and upgrades of their respective side of the interconnection point. Further, those costs should be relatively modest and limited to augments at the point of interconnection. For example, a transit provider should not be charged for upgrading an ISP's last-mile infrastructure, but it could be reasonably expected to pay for augments on its side of an interconnection point to accommodate network demand.

A ban on access fees is consistent with the Commission's position in the 2010 Open Internet Order. In that proceeding, the Commission looked skeptically on paid prioritization, which reflects discriminatory behavior, and extremely critically on fees for access, which functions very much as blocking.[12] The Commission's skepticism of these practices should logically apply to interconnection points, as well.

IV. Conclusion

The importance of network neutrality rules for our economy and our society is difficult to overstate. In its relatively short existence, the Internet has become a robust digital public square and one of the world's most successful platforms for economic growth and job creation. Americans are relying on the Commission to preserve the benefits of the Internet while protecting its users from abuse. We urge the Commission to adopt rules that address the full scope of harms related to last-mile ISP networks, including their entry points at interconnection pathways. With the aforementioned oversight regime and light-touch rules, we respectfully submit that the Commission can achieve this objective.

Respectfully submitted,

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[12] Open Internet Order at para. 26.