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November 18, 2014

VIA ELECTRONIC FILING

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: Applications of Comcast Corp., Time Warner Cable Inc., Charter Communications, Inc., and SpinCo for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-57

Dear Ms. Dortch:

On November 14, 2014, Hank Kilmer, Cogent Communications Group, Inc.'s ("Cogent") Vice President of IP Engineering, Robert Beury, Cogent's Chief Legal Officer, and Robert Cooper and Hershel Wancjer of Boies, Schiller & Flexner LLP, outside counsel to Cogent, met with the Commission staff copied below. During the session, Messrs. Kilmer and Beury addressed issues and answered questions concerning Cogent's dealings with Comcast Corporation ("Comcast") and Time Warner Cable, Inc. ("TWC"), Internet traffic ratios, network management practices, and competition for backbone/transit services in the United States. More generally, they discussed the serious competitive and public interest concerns raised by the proposed Comcast-TWC combination.

A. Cogent's Dealings with Comcast and TWC

Cogent historically has had relatively amicable relationships with both Comcast and TWC, under which Cogent and those firms have exchanged Internet traffic on a settlement-free basis for several years. Until relatively recently, both Comcast and TWC, upon request, routinely augmented capacity of their interconnection links with Cogent. Informal, ad hoc discussions concerning augmentations would occur around the time the links between the networks reached 70% utilization, the point at which ISPs throughout the industry typically upgrade their interconnections with other networks to avoid service problems.[1] This pattern and practice changed abruptly after Cogent began providing transit service to Netflix, which poses a

[1] *See* Declaration of Henry (Hank) Kilmer, Vice President, IP Engineering, Cogent Commc'ns Grp., Inc., MB Docket No. 14-57 (filed Aug. 25, 2014) ¶ 16 ("Kilmer Decl."). *See also* Declaration of Constantine Dovrolis, Ph.D., Professor at the School of Computer Science of the Georgia Institute of Technology, MB Docket No. 14-57 (filed September 23, 2014), Section 3.2 ("Typically, if the utilization of a link during peak-usage time periods is more than 70%, the link can experience congestion episodes in which traffic is delayed or even dropped.").

direct competitive threat to both Comcast's and TWC's proprietary MVPD and on-demand video offerings.[2]

As has been well-documented, the refusals of Comcast and TWC to upgrade their interconnections with Cogent yielded degraded service to Cogent's transit customers and, importantly, to Comcast's and TWC's own broadband subscribers.[3] Notably, Cogent did not experience similar congestion issues with other large broadband ISPs that added sufficient capacity to their interconnections with Cogent, even though they "experienced percentage increases in traffic from Cogent that were similar to the large consumer ISPs."[4]

Messrs. Kilmer and Beury also addressed certain assertions made in this proceeding by Kevin McElearney, Comcast's Senior Vice President of Network Engineering. For example, Mr. McElearney claims that "Cogent could have solved its [congestion-related] problems, without paying Comcast a dime" if it had simply worked with its edge provider customers (*e.g.*, Netflix) to distribute traffic "among the various routes available" to those edge providers, "rather than insisting that all of [the traffic] stay on any particular provider's route."[5]

As Mr. Kilmer explained (echoing many other commenters in this proceeding), it makes no difference how an edge or transit provider routes the content requested and paid for by Comcast's subscribers to Comcast's last-mile network, because every path or combination of paths must ultimately interconnect with Comcast. The only way to reach Comcast's subscribers is through Comcast. The same, of course, holds true for TWC. Accordingly, congestion at

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[2] *See* Declaration of Joseph Farrell, DPhil, Cogent Commc'ns Grp., Inc., Federal Communications Commission MB Docket No. 14-57 (filed Aug. 25, 2014) ¶¶ 136-141 ("Farrell Decl.").

[3] *See* A Measurement Lab Consortium Technical Report, *ISP Interconnection and its Impact on Consumer Internet Performance*, http://www.measurementlab.net/static/observatory/M-Lab_Interconnection_Study_US.pdf (October 28, 2014), at 4 ("M-Labs Report") ("[W]e observed sustained performance degradation experienced by customers of Access ISPs AT&T, **Comcast**, Centurylink, **Time Warner Cable**, and Verizon when their traffic passed over interconnections with transit ISPs" **Cogent**, L3 and XO.) (emphasis added); Kilmer Decl. ¶¶ 61-68 (detailing the impact Comcast's refusal to augment port capacity at interconnection points with Cogent had on Cogent and Comcast customers). The M-Labs Report also noted that (a) "congestion and under-provisioning were causal factors in the observed degradation symptoms[,]" and (b) the study "indicates that Cogent had sufficient capacity in at least some portion of their network and rules out any across-the-board problems with Cogent's network as the cause of degradation observed for" Comcast and TWC. M-Labs Report at 4, 9.

[4] Farrell Decl. ¶ 137 (discussing Charter and Cox). *See also* M-Labs Report at 9 (explaining that, at the same time there was congestion at Cogent's interconnection points with Comcast, TWC and Verizon at a measurement point in New York City, "Access ISP Cablevision uniformly experienced good performance when connecting to this same Cogent-hosted measurement point[.]").

[5] Declaration of Kevin McElearney, Senior Vice President, Network Engineering, Comcast Cable, MB Docket No. 14-57 (filed Sept. 23, 2014), ¶ 52 ("McElearney Decl.").

interconnection points is not the result of inefficient routing. Rather, it is a result of Comcast's refusal to relieve congestion absent the payment of a terminating access fee.

Indeed, under Mr. McElearney's formulation, the only way for Cogent to address congestion at its interconnection points with Comcast—short of capitulating to Comcast's demands for payment to access its subscribers—would have been to terminate its relationship with Netflix, which would then need to seek transit from a competing backbone provider. Had that happened, Netflix' next choice of transit provider could have expected similar results. Ultimately, while Cogent was unwilling to have Comcast dictate with whom it could do business, Comcast (and later, TWC) achieved its goal, in that the congestion-creating strategy forced Netflix to find another option. That option, as is well known, amounted to Netflix paying an access fee to Comcast for a direct, uncongested path into the network. Put differently, by leveraging its market power and absolute control over access to its millions of customers, Comcast (and later, TWC) was able to extract a fee to reach those consumers. Not only is this inconsistent with the traditional settlement-free exchange of traffic among networks but, more ominously, it foreshadows what a post-merger entity with control over access to vastly more consumers can be expected to do in the future.

Mr. McElearney also maintains that, during a 2012 joint Cogent/Comcast capacity review, "Cogent informed Comcast that it did not foresee needing any additional capacity for the coming year."[6] Comcast provides no evidence to substantiate this assertion, and Cogent has no recollection or record of such a discussion. Indeed, Mr. Kilmer emphasized that it is not a position that Cogent would ever take in negotiations with a peer, and added that, in all his time in the industry—which dates back to his work with UUNET, one of the first commercial Internet service providers—he has never heard an ISP of any kind preemptively disavow that it might need additional capacity for the following year.[7]

B. Traffic Ratios

Mr. Kilmer explained that traffic ratios across the industry—including those between Cogent and Comcast or TWC—have *never* been "in balance" or, for that matter, an impediment to the delivery of traffic (regardless of the volume of traffic being exchanged).[8] For example, in

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[6] McElearney Decl. ¶ 40.

[7] Moreover, the suggestion in the record that Comcast somehow "accommodated" Cogent's requests for additional capacity by "adding 50 Gigabits of incremental capacity in the first few months of 2013" is also disingenuous. *See* Kilmer Decl., Exhibit 2 (June 20, 2013 letter from Arthur R. Block (Comcast) to Robert N. Beury, Jr. (Cogent)). As Mr. Kilmer explained, at approximately the same time Comcast added 50 GBs of capacity, it also removed 40 GBs of capacity, resulting in the net addition of only 10 GBs of capacity. In any event, the upgrades did nothing to address the volume of bandwidth-intensive content being requested by Comcast's own subscribers. *See* Farrell Decl., Figures 11 and 13.

[8] As Mr. Kilmer added, historical traffic growth rates have not changed much in the last twenty years. Indeed, on a percentage basis, the annual growth rates in traffic were actually higher in the 1990s than they are today. Thus, there should be nothing noteworthy about recent growth rates when edge or transit providers and ISPs are both selling to and acquiring additional customers on a regular basis, with

the late 1990s, the advent of online video games greatly increased the amount of traffic flowing between networks. Accordingly, at that time ratios between transit providers and last-mile ISPs were also out of balance. However, imbalanced ratios did not pose an issue back then, perhaps because video games did not directly threaten the vertically-integrated offerings of residential ISPs. Regardless, as a growing and more diverse set of competitors continue to offer ISP end-users new and more creative broadband products and services that compete directly with Comcast and/or TWC businesses (*e.g.*, HBO's recently announced streaming services, or alarm monitoring services provided by companies like ADT), residential ISPs will have even more incentives to degrade the delivery of such content. At a minimum, the degradation of such content will be an obvious mechanism by which ISPs like Comcast and/or TWC can raise their rivals' costs. And, as illustrated by recent events involving Netflix, the Applicants have the ability to match their incentives.

Mr. Kilmer also noted that, to engineers, ratios do not represent a metric of value, nor do imbalanced ratios present a technical problem. The bottom line is that if a provider offers a service to its customers—as Comcast and TWC do when they sell access to the entire Internet at advertised speeds—they must follow through on those promises. That is why both transit providers and ISPs, who regularly invest millions, or *billions*, of dollars to upgrade their networks,[9] have not claimed they lack the capacity to accept and/or deliver the increased amount of bandwidth-intensive content end users are currently demanding.[10] Once a transit provider or ISP provisions adequate capacity to serve the needs of its customers (*e.g.*, edge providers for Cogent or end-users for Comcast or TWC), it cannot and should not be expected to subsidize corresponding upgrades on the other side of an interconnection point. Moreover, once two

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adequate capacity to exchange the resulting traffic. All of that additional content is being paid for on both sides of the interconnection points (content providers paying transit providers for delivery of traffic to ISP subscribers, and end-users paying their ISPs for access to all lawful content). Moreover, as Mr. Kilmer explained, since the addition of capacity is neither expensive nor complicated, the addition of new customer bases should not result in or require drawn out pre-emptive discussions concerning capacity upgrades. *See also* M-Labs Report at 3 (explaining that the process of interconnecting two networks at an IXP is "rarely expensive or tricky").

[9] Kilmer Decl. ¶ 8 (stating that, as the volume of Internet traffic carried by Cogent's network has increased 716% over the past five years—from approximately 2,226,229 TBytes to 18,155,339 TBytes per year—"Cogent has accommodated that increase with capital expenditures averaging $48 million per year."); *Opposition to Petitions to Deny and Response to Comments of Comcast Corp. and Time Warner Cable Inc.*, MB Docket No. 14-57 (filed Sep. 23, 2014), at 37 ("Comcast has invested billions of dollars to upgrade its network to deploy DOCSIS 3.0 and transition its systems to all-digital.").

[10] Indeed, if Comcast lacked sufficient capacity within its own network, then Netflix performance would not have improved so soon after Netflix signed its direct connection deal with Comcast. Moreover, the suggestion by Mr. McElearney that Cogent sold more capacity than its network can handle (*see* McElearney Decl. ¶ 52) is baseless. As Mr. Kilmer has explained, Cogent's network is not close to operating at full capacity. This is because Cogent regularly upgrades network capacity in order to avoid *any* sustained packet loss or congestion. *See* Kilmer Decl. ¶ 7 ("Any sustained packet loss experienced by Cogent's customers can be attributed to congested interconnection points with our peering partners, which is outside of Cogent's sole control."). *See also* M-Labs Report at 9.

networks agree to interconnect, each should ensure that it maintains adequate interconnection to facilitate the flow of traffic between them.

Finally, Messrs. Kilmer and Beury generally explained that Cogent evaluates requests from other networks to peer on a settlement-free basis according to a number of criteria, including (a) the size of the requesting network; (b) the requesting network's geographic reach and the number of interconnection points it maintains; (c) the anticipated amount of traffic to be exchanged; and (d) expectations about the proper maintenance of interconnection facilities.[11] While Cogent does not believe that so-called "traffic ratios" are an appropriate criterion for deciding whether to agree to settlement-free peering in the context of backbone-to-backbone negotiations, such ratios are even less logical in the context of negotiating with cable broadband providers.[12] To the extent Cogent has deviated from its settlement-free criteria, it has been to agree to settlement-free peering arrangements with cable broadband networks, like Comcast and TWC, neither of which meet these criteria.[13] It has done so because each of these entities possesses and exercises sufficient market power to obtain interconnection terms and conditions for which they do not, as a general proposition, qualify. Such market power derives from their bottleneck control over their residential broadband subscribers. Allowing Comcast and TWC to combine will only exacerbate this problem.

C. Network Management

Mr. Kilmer described how congestion affects bandwidth-intensive content (*e.g.*, streaming video) more than other types of content (*e.g.*, email), and observed that the content most susceptible to congestion competes directly with Comcast's own proprietary content. As a result, Comcast's congestion strategy potentially harms *all* Comcast subscribers and Cogent customers. To that end, Mr. Kilmer generally described how Comcast subscribers attempting to telecommute from home have experienced significant difficulties in connecting to their employer's servers, where their employer was a Cogent Internet access customer.

Indeed, beginning in November 2013, employees of midsize investment consultancy NEPC, a business that purchases Internet access and inter-city transit services from Cogent, began experiencing difficulty accessing NEPC servers. By January 2014,

> [r]emote access had become untenable. Calls were dropping right and left. Files were freezing and not opening for minutes at a time. … Employees who had been used to having state-of-the-art access to their work materials from home or on the road started working

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[11] Kilmer Decl. ¶ 16.

[12] Kilmer Decl. ¶¶ 56-59. Indeed, Mr. Kilmer also noted that traffic ratios between Cogent and Comcast had never been "in balance."

[13] Kilmer Decl. ¶¶ 42-45.

> in the middle of the night on the off chance that connectivity would be better.[14]

A number of the employees impacted were Comcast ISP subscribers.[15] This is just one example of how, "in their attempts to charge Netflix for access to their subscribers, Comcast and some other networks were recklessly affecting Internet connectivity for businesses like NEPC."[16]

While the direct connection agreement between Comcast and Netflix alleviated some of the congestion and resultant degradation described above, this was only because Netflix agreed to pay an access fee for direct connection to Comcast, "thus reducing the Netflix traffic carried by Cogent bound for Comcast customers."[17] It did not, however, solve the problem entirely. As a result, the disparate impact such conduct had on certain of its business customers forced Cogent to implement a congestion-mitigation strategy whereby it prioritized the "quality of service" (QoS) to a sub-set of its business customers. The implementation of this strategy was unprecedented in Cogent's history, and was only undertaken as a last resort to improve connections for customers whose Internet access had been compromised by the refusal of certain ISPs (including Comcast and TWC) to alleviate congestion at interconnection points with Cogent. Moreover, unlike Comcast and TWC, Cogent has carried out this congestion-mitigation technique in an open and transparent fashion.

D. Competition for Backbone/Transit Services in the United States

In response to a question concerning the backbone providers against whom Cogent competes on a regular basis for the provision of transit services to high-bandwidth customers in the United States, Messrs. Kilmer and Beury indicated that Cogent's primary competitors typically include some or all of the following: Level 3 Communications, Tata Communications, TeliaSonera, XO Communications, and NTT Communications. Secondary competitors include Sprint, PCCW, Telecom Italia, GTT and Zayo.[18]

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As Cogent described in its Petition to Deny and accompanying declarations—and will further address in a forthcoming reply in support of that Petition—the Comcast-TWC transaction poses a grave threat to the future delivery of Internet content in the United States. This is

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[14] *See* Susan Crawford, *Jammed: The Cliff and the Slope*, Medium, https://medium.com/backchannel/jammed-e474fc4925e4 (October 30, 2014).

[15] *Id.* at 14.

[16] *Id.* at 2.

[17] Farrell Decl. ¶ 138.

[18] For certain customers, Cogent also competes for business against CDNs such as Limelight Networks and Akamai.

especially true with respect to content or applications that compete with the Applicants' proprietary video businesses. Comcast's and TWC's deliberate measures to create congestion at interconnection points with Cogent and others offers a blueprint for the ways in which a merged, and substantially more powerful, entity will be able to exercise its market power to advantage itself and harm its existing and emerging online competitors. That course of conduct, and its implications for the future, is the central public interest issue the Commission must evaluate in the context of the transaction.

Please direct any questions regarding this correspondence to my attention.

Sincerely,

Robert M. Cooper

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