

RESPONSE TO REQUEST FOR INFORMATION FROM
LEVEL 3 COMMUNICATIONS, INC.

As an initial matter, based on discussions with Commission staff, we understand that our responses are to be limited to discussing how Level 3 delivers content delivery network (CDN) traffic in the United States. *[[BEGIN HIGHLY CONFIDENTIAL]]*

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1. Identify, for the month of June, 2014, the 20 U.S. ISPs to whom the Company delivered the most traffic, measured by the total volume of traffic terminated on the ISP in Gigabytes.

Per our discussion with Commission staff, “ISP” is defined for the purposes of our response to this question as ISPs that provide residential broadband Internet access service in the United States.

Level 3’s records indicate, that Level 3 delivers traffic to a total of *[[BEGIN HIGHLY CONFIDENTIAL]]* *[[END HIGHLY CONFIDENTIAL]]* U.S. ISPs, identified in Attachment 1.

2. For each of the 20 ISPs identified in response to Request 1, and for all other ISPs in the United States combined, by Method(s) of Interconnection and for the Relevant Period, state:

Level 3 uses the P95 method to measure traffic delivered to ISPs. Under the P95 method, per port usage is sampled by Level 3 every 5 minutes for the previous 5 minute period. At the end of each month, the top 5% of traffic samples are discarded. The P95 value is the highest value of the remaining samples. Thus, the answers to questions 2.a and 2.b are the same, except for the position of the decimal.

a. the amount of the Company’s traffic delivered to the ISP(s) in Gigabytes;

See Attachment 1.

b. the 95th percentile measurement of the Company’s traffic delivered to the ISP(s) in Mbps; and

See Attachment 2.

c. the Company’s total cost of delivering traffic to the ISP(s) and a description of how this amount was calculated including all data needed to calculate this amount.

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3. For each Person contained on the list attached as Attachment A, state:

a. whether the Person could provide transit services, in whole or in part, to deliver traffic terminating in the United States during the Relevant Period. Briefly describe the benefits, restrictions, detriments and risks associated with each service, and any reasons that the service could not be obtained from each Person on commercially reasonable terms, including but not limited to price and limited capacity. Identify any other Person that the Company believes could provide transit service to the Company for traffic to be terminated in the United States, during the Relevant Period who is not listed on Attachment A.

Level 3 does not purchase Transit Service to deliver traffic terminating in the United States.

b. Identify all firms that have bid, negotiated, or otherwise sought to provide transit service to the Company for traffic terminating in the United States during the relevant period, and whether the option would be available to the Company on commercially reasonable terms. Describe the benefits, restrictions, detriments and risks associated with each option, and any reasons that the service could not be obtained from each provider on commercially reasonable terms, and identify the provider(s) selected and the reasons that the Company selected these provider(s).

Level 3 does not purchase Transit Service to deliver traffic terminating in the United States.

c. For any non- ministerial changes to the Company’s transit arrangements with any ISP since January 1, 2012, describe the change and the reasons for the change and identify the Person who initiated the change.

Level 3 does not purchase Transit Service to deliver traffic terminating in the United States.

4. Separately, for each ISP in the United States with whom the Company has a Paid Peering Interconnection Agreement, for the Relevant Period state:

a. the total interconnection capacity made available to the Company at the end of the month in Mbps;

b. a description of the method used to determine monthly recurring charges, sufficient to allow calculation of monthly recurring charges for any level of usage;

c. the Company’s total interconnection payments to the ISP (excluding payments related to facilities and utilities in cases where the Company locates equipment within the ISP’s facilities);

d. the Company’s interconnection payments to the ISP for port installation and other non-recurring charges (excluding payments related to facilities and utilities in cases where the Company locates equipment within the ISP’s facilities);

e. the Company’s recurring interconnection payments to the ISP (excluding payments related to facilities and utilities in cases where the Company locates

equipment within the ISP’s facilities). If a recurring payment is determined on an annual basis, divide the annual recurring payment by twelve;

f. the Company’s payments related to facilities and utilities to the ISP in cases where the Company locates equipment within the ISP’s facilities. (If the Company locates equipment within the ISP’s facilities but is not charged for this, report a payment of 0. If the Company does not locate equipment within the ISP’s facilities report “NA.”); and

g. the basis for determining Capacity that is required to be made available to the Company under the Agreement, if such a requirement exists.

(The sum of the amounts stated in response to Requests 4(d) and 4(e) should be equal to the amount stated in response to Request 4(c).)

Level 3 generally does not offer, sell, or purchase Paid Peering. *[[BEGIN HIGHLY CONFIDENTIAL]]*

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5. Separately for each ISP in the United States with whom the Company has a Settlement-Free Peering Interconnection Agreement, state, for the Relevant Period, the total Interconnection Capacity available to the Company at the end of the month in Mbps.

See Attachment 4.

6. Provide one copy of the Company’s most recent strategic plans, business plans and studies, forecasts, budgets or projections relating to the Company’s CDN service, including, but not limited to, discussion of competition, competitors, capacity restraints, customer trends, prices, plans to provide service to OVDs that offer video programming in ultrahigh definition format or linear channels, margins, profits, costs, peering, transit, or other industry trends affecting the Company’s services.

Level 3 provides the following Highly Confidential documents in response to this Request:

LVLTT-FCC-000040 - 2015 Product Planning CDN – outlines Level 3’s CDN roadmap strategy for 2015.

LVLTT-FCC-000066 - CDN Interconnection Strategy (January 2014) – deck produced at the start of 2014 to highlight the risks to the CDN revenue plan presented by peering constraints.

LVLTT-FCC-000076 - 2015 CDN Growth Plan – identifies Level 3’s CDN growth plan and impact of peering constraints on business.

7. Describe or provide documents sufficient to show the effects that an ISP’s network management practices have on the delivery of the Company’s CDN service, including but not limited to Comcast’s network practices reflected in Comment (RFC) 6057 <http://tools.ietf.org/html/rfc6057> (describing how heavy users’ packets are deprioritized during times of CMTS congestion), <http://xfinity.comcast.net/terms/network/update/> and TWC’s network management practices described on its website (http://help.twcable.com/description_of_network_management_practices.html).

The network management policies referenced in this question may affect the performance of content delivered by Level 3’s CDN service for individual users whose usage triggers the network management protocols employed by their service provider. While such policies will not generally affect Level 3’s CDN service beyond those individual users, the broader, often unwritten policies employed by some ISPs with large numbers of mass-market broadband Internet access service customers have a material impact on Level 3’s CDN service.

The key trend that Level 3 has observed in this area is that, as the Internet has grown, and particularly as the economic importance of the Internet has grown, the large eyeball ISPs have increasingly attempted to leverage their control over access to users to extract tolls. SBC CEO Ed Whitacre’s oft-quoted statement in 2005 that he would not allow Internet companies to use his pipes “for free” is as illuminating today as it was then. A statement like that—aside from ignoring the fact that an ISP’s customers have already paid for Internet access, including both the resources on the ISP’s own network as well as those on other networks—makes no sense in a non-commercial Internet. For example, universities that make available resources, whether streaming video or web pages or even simply email, are not susceptible to pressure that they pay for the “use” of an ISP’s pipes when that ISP’s customers attempt to access that content, and so there is no point in trying to pressure them. However, commercial entities are susceptible to such pressure. And when commercial entities, like Netflix or Major League Baseball, sell a streaming video service that critically depends on their customers having reliable, uncongested access, those commercial entities will have no choice but to pay a toll if the ISP controls access to a sufficient number of customers.

Notably, in order for an ISP to be successful in demanding a toll, it must ensure that there are no non-toll (i.e., settlement-free) routes into its network that can offer sufficient capacity to take the traffic. And so a related trend is that some of the largest ISPs have, for the last several years, despite repeated requests, refused to increase interconnection capacity with Level 3 and other Transit Service and CDN providers unless Level 3 or these others pay a toll. For example, Level 3 has explained that Verizon attempted to impose just such a toll at the point of interconnection between its network and the Level 3 network. Even though the Verizon and Level 3 networks had plenty of additional unused capacity available, Verizon refused to allow Level 3 sufficient interconnection capacity unless Level 3 would agree to pay a toll to “open the door” for more

traffic. As a result, only a fraction of the Level 3 traffic bound for the Verizon network was successfully transmitted; the rest was blocked by Verizon's conduct.¹

Where Level 3 refuses to pay these tolls, the connections to these ISPs congest at peak usage times (or in some cases virtually the entire day) and have for several years. As discussed in greater detail in Level 3's 2015 CDN Growth Plan at LVLT-FCC-000083, *[[BEGIN HIGHLY CONFIDENTIAL]]*

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HIGHLY CONFIDENTIAL]] Worse, from a public policy perspective, is that edge providers that might otherwise have purchased Level 3's CDN service must now pay higher rates to CDN providers that have agreed to pay access tolls in order to obtain uncongested access. These edge providers must, ultimately, pass their unnecessarily inflated costs on to their retail customers.

Level 3's experience suggests that these ISPs may be indifferent between, on the one hand, leaving the Level 3 connection congested, which forces the edge providers like Netflix to pay the ISPs for uncongested access directly, and, on the other hand, receiving a toll from Level 3, and providing Level 3 with uncongested access. An unfortunate consequence of this trend is that access to all of the resources on the Internet made available by entities that either will not or cannot pay a toll directly or indirectly (e.g., the universities in the example above), will be degraded, because the only way to extract the toll from companies that can pay is to ensure that everyone who does not pay suffers.

8. Describe or provide documents sufficient to show whether the terms of the Company's Interconnection Agreements with ISPs that have an Internet Backbone or offer Transit Service are different from the terms of the Company's Interconnection Agreements with ISPs who do not have an Internet Backbone or offer Transit Service.

Level 3's Interconnection Agreements in the U.S. with ISPs who do not have an Internet Backbone or offer Transit Service are, with few exceptions, agreements under which Level 3 sells Transit Service to the ISP.

Level 3 is more likely to engage in Settlement-Free Peering in the U.S. with ISPs that have an Internet Backbone or offer Transit Service. As discussed above, however, ISPs that have an Internet Backbone or offer Transit Service and that have large numbers of mass-market broadband Internet access service customers have been seeking to extract tolls from Level 3 and other providers of Internet Backbone Service, Edge Providers, CDNs, and other Internet network and service providers.

¹ See Mark Taylor, Level 3, Verizon's Accidental Mea Culpa, at <http://blog.level3.com/open-internet/verizons-accidental-mea-culpa/>. See also Letter from Joseph C. Cavender, Level 3, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 14-28, at 2-3, 9 (filed Oct. 27, 2014).

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ATTACHMENT 1 – RESPONSE TO REQUEST 1

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ATTACHMENT 2 – RESPONSE TO REQUEST 2.A

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ATTACHMENT 3 – RESPONSE TO REQUEST 2.B

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ATTACHMENT 4 – RESPONSE TO REQUEST 4.A

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ATTACHMENT 5 – RESPONSE TO REQUEST 5

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NOTE ON DOCUMENT PRODUCTION

The documents produced at LVLT-FCC-000001 through LVLT-FCC-000123 are redacted in their entirety.