

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matters of

GLOBAL CROSSING LIMITED,
Transferor,

and

LEVEL 3 COMMUNICATIONS, INC.,

Transferee,

Applications Filed for the Transfer of Control of
the Licensee Subsidiaries of Global Crossing
Limited to Level 3 Communications, Inc.

IB Docket No. 11-78

**JOINT OPPOSITION AND REPLY COMMENTS OF
LEVEL 3 COMMUNICATIONS, INC., AND GLOBAL CROSSING LIMITED**

Matthew A. Brill
Brian W. Murray
LATHAM & WATKINS LLP
555 11th Street, N.W., Suite 1000
Washington, D.C. 20004
+1 202 637 2200 tel

*Counsel for Global Crossing Limited
and Its Subsidiaries*

21 July 2011

John T. Nakahata
Kent D. Bressie
Brita Dagmar Strandberg
Kristine Laudadio Devine
WILTSHIRE & GRANNIS LLP
1200 18th Street, N.W., Suite 1200
Washington, D.C. 20036-2516
+1 202 730 1300 tel

*Counsel for Level 3 Communications, Inc. and
Its Subsidiaries*

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
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SUMMARY

XO Communications LLC (“XO”) and Pac-West Telecomm, Inc. (“Pac-West”)’s comments with respect to the applications and petition filed by Level 3 Communications, Inc. (“Level 3 Parent,” with its operating subsidiaries, collectively, “Level 3”) and Global Crossing Limited (with its operating subsidiaries, “GCL,” and together with Level 3, “Applicants”) do not present any rationale for denying consent to Level 3 Parent’s acquisition of GCL.

Neither commenter disputes the public interest benefits of the Proposed Transaction, which include consumer benefits by enabling the Applicants to offer expanded services and a broader geographic reach as well as cost savings as a result of merger-specific efficiencies and synergies. Instead, XO claims that the combined post-transaction company could “tip” the Internet backbone toward monopoly while Pac-West’s objections focus on a tariff that is currently the subject of a Commission inquiry into its facial validity.

XO’s claims are wholly without merit. Its own comments cite economic experts that demonstrate that “tipping” is not possible based on Level 3’s post-transaction market shares. The Internet Connectivity market has changed dramatically over the last ten years and Tier 1 Internet Backbone Providers (“IBPs”) like Level 3 and GCL no longer play the primary role in connectivity that they did in the late 1990s and early 2000s. This is confirmed by the dramatic drop in transit prices since 1998 – from around \$1200 per Mbps per month when WorldCom acquired MCI in 1998 to \$25 when AT&T acquired BellSouth in 2007. This striking shift in the pricing of substitutes is the result of a shift away from a market in which consumers bought transit from just a small number of IBPs to one in which providers have a myriad of alternatives, including settlement-free peering, paid peering, direct peering, Internet Exchange Points (“IXPs”), content delivery networks (“CDNs”), and transit.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

The Proposed Transaction will not reverse this trend. The availability of multiple alternatives for transit has a market diluting effect. Multihoming has a similar market diluting effect, as most transit customers do not obtain transit from a single provider. Indeed, at least 86 – 88 percent customers of Level 3 and GCL are multihomed with providers other than the two companies—meaning they can immediately divert traffic from Level 3 or GCL . XO’s claims that the combined companies will have a market share approaching 35 percent ignores these effects—even if true, an amount insufficient to “tip” the market to the Applicants.

Nor are XO’s market share calculations reliable. XO bases its market share calculations on data from two Renesys blogs, rather than from the complete Renesys dataset, and it fails to correct for the myriad flaws in that information. The Renesys data presumes a market composed only of the “Top Ten” networks, ignoring the dozens of other transit providers with which the Applicants compete. XO’s “market share” calculations based on the “top ten” companies with which it exchanges traffic similarly are founded on an artificial subset of traffic and XO provides no basis for assuming that the Internet as a whole mirrors its traffic. In reality, the Applicants will have a market share of no more than 9 to 10 percent post-consummation. Such a market share is.

The Proposed Transaction will yield undisputed, merger-specific public interest benefits. Neither commenter has presented any credible claim of public interest harms. The Commission should therefore promptly consent to the Proposed Transaction.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

TABLE OF CONTENTS

SUMMARY ii

TABLE OF CONTENTS iv

I. The Public Interest Benefits of the Transaction Are Undisputed. 2

II. Neither Commenter Shows that the Proposed Transaction Would Disserve the Public Interest..... 5

A. XO Fails to Demonstrate that the Proposed Transaction Would Harm Competition in the Market for Internet Connectivity. 5

1. The Market for Internet Connectivity Has Changed Dramatically Since 1998, 2000, and 2005..... 8

2. The Proposed Transaction Will Not Plausibly Permit the New Level 3 to Raise Internet Connectivity Prices or “Tip” the Market through Interconnection Degradation..... 11

a. The Proposed Transaction Will Not Reverse the Market Developments that Have Led Transit Prices to Drop by Over 99 Percent Since 1998..... 12

b. Level 3 and GCL Each Have Very High Levels of Multi-Homed Customers, Thereby Constraining the Combined Company’s Ability to Raise Prices or “Tip” the Market..... 13

c. XO Also Ignores Economic Literature Showing that Tipping Is Not Possible, Even at XO’s Claimed Post-Transaction Market Shares..... 15

d. XO’s “Market Share” Calculations Are Unreliable and Overstated. 16

e. XO’s Claims that Multiple “Hops” Degrade Quality Are Both Unsupported and Technically Incorrect..... 21

B. Pac-West Raises Issues Outside the Scope of the Commission’s Transaction Review. 22

CONCLUSION 24

LIST OF EXHIBITS 25

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

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LEVEL 3 COMMUNICATIONS, INC., AND GLOBAL CROSSING LIMITED**

Level 3 Communications, Inc. (“Level 3 Parent,” with its operating subsidiaries, collectively, “Level 3”) and Global Crossing Limited (with its operating subsidiaries, “GCL,” and together with Level 3, “Applicants”) hereby respond to the only two comments filed with respect to their applications seeking Commission consent for Level 3 Parent’s acquisition of GCL (the “Proposed Transaction”). No party filed a petition to deny. Both commenters, XO Communications, LLC (“XO”), and Pac-West Telecomm, Inc. (“Pac-West”), are currently engaged in commercial negotiations and/or disputes with Level 3. Neither presents a credible argument that the Proposed Transaction will harm the public interest.

First, XO claims that the combined post-transaction company could “tip” the Internet backbone toward monopoly. This claim is wholly implausible. The vast weight of the economic literature—including articles cited by XO’s own economic expert—demonstrates that

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

“tipping” is not possible based on Level 3’s post-transaction market shares and level of multihoming. This is but the chief flaw in XO’s arguments, which consistently disregard both facts and economics in order to manufacture harms supposedly arising from the Proposed Transaction.

Second, Pac-West has filed an objection raising Level 3’s refusal to pay certain charges under a tariff that is currently the subject of a Commission inquiry into its facial validity.¹ The validity of that tariff should, of course, be resolved in the Commission’s ongoing proceeding, not in the course of this transaction review.

I. The Public Interest Benefits of the Transaction Are Undisputed.

As set forth in the applications, the Proposed Transaction will serve the public interest by enabling the combined company to offer customers an expanded suite of services (globally-delivered transport, Internet protocol-based, data, content delivery, data center, collocation, and voice services) and an expanded geographic reach (across North America, Latin America, Europe, and Asia) through a combination of the Applicants’ intercity and metro networks and undersea cable facilities. The Proposed Transaction will join two complementary providers and thereby improve their ability to compete with larger providers, such as AT&T and Verizon Business. The Proposed Transaction will create growth opportunities by combining Level 3’s position with wholesale and content customers with GCL’s expertise serving national and multinational corporations and carrier customers.

The Proposed Transaction also will result in substantial merger-specific cost savings and synergies which, given the highly competitive nature of Internet connectivity markets, will

¹ *Pleading Cycle Established for Comments On Pac-West Telecomm, Inc. and Verizon Petitions for Declaratory Ruling*, Public Notice, WC Docket No. 11-115 (rel. July 7, 2011).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

redound to the benefit of consumers. The existing Level 3 and GCL networks in the United States complement one another. In the late 1990s, Level 3 built an intercity U.S. network with multiple conduits for fiber optic cable. The intercity network connects dozens of large and medium-sized cities, in some of which Level 3 also built or acquired city networks. Level 3's metropolitan fiber network spans 26,000 route miles in North America, in addition to its intercity network. In most instances, only one or two of the conduits emplaced by Level 3 contain fiber, allowing Level 3 to expand by pulling incremental fiber in cities and along intercity routes as demand warrants. By contrast, most of GCL's intercity and metropolitan network consists of dark fiber, circuits, and collocation space leased from many different network owners, including Qwest, Level 3, AboveNet, and regional operators. While Level 3 does lease dark fiber and circuits from third parties to reach buildings not connected to its constructed network, GCL leases proportionately far more fiber, circuits, and technical space than does Level 3.²

Level 3 and GCL estimate that they will save about \$340 million annually by combining the companies, better positioning them to compete as prices continue to decline.³ Of these synergies, an estimated 39 percent will be realized in reduced network expense, 49 percent in lower operating costs, and 12 percent in diminished capital expenditures.⁴ Further, reducing debt

² Declaration of Nicolas Pujet, Level 3 Communications, Inc., ¶¶ 5-6 (“Level 3 Declaration”) (attached as Exhibit 1).

³ *Id.* ¶ 7; Level 3 Communications, and Global Crossing, “Level 3 and Global Crossing” at 8, Apr. 11, 2011 (“Level 3 and Global Crossing Presentation”), available at http://files.shareholder.com/downloads/LVLT/1328159591x0x457880/cdb697f7-5362-4481-8ecd-b9883de07b15/Level%203%20Communications_Global%20Crossing%20Announcement_Presentation_2011-04-11.pdf.

⁴ Level 3 Declaration at ¶ 7; Level 3 and Global Crossing Presentation at 14.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

relative to earnings will lower the combined company's cost of capital and thereby improve its long term ability to invest in its network.⁵

The majority of network expense reductions come from moving GCL's (and sometimes Level 3's) "off-net" circuits onto fiber facilities owned by the other party. For example, if GCL currently leases a circuit from AT&T, but Level 3 owns network facilities going to the same location, GCL's customer traffic can be migrated to Level 3's network, dramatically reducing the cost of providing that portion of the service. Where the two companies have parallel circuits that are underutilized, the companies can combine those circuits, thereby improving efficiency and reducing costs. In some cases, the Applicants' expenditures for off-net connections to a given destination even will justify building fiber to replace both companies' off-net circuits. In addition, the Proposed Transaction will allow the combined company to reap network expense savings through routing combined voice traffic over the lowest cost routes available to either company.⁶

The Proposed Transaction will also result in reduced operating expenses outside the Applicants' networks. The majority of these savings will come from gradual reductions in headcount in overlapping functions, primarily in the U.S. The Applicants expect further operating expense efficiencies in other general and administrative costs, through elimination of redundant office space, professional fees, and equipment maintenance.⁷

The combined company will also be able to reduce the amount of capital expenditure for a given investment. With their combined purchasing volume, the Applicants expect savings

⁵ Level 3 Declaration at ¶ 7.

⁶ *Id.* ¶ 8.

⁷ *Id.* ¶ 9.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

from volume discounts for equipment and software purchases. In addition, where the Applicants' networks are geographically proximate in the United States and Europe, it will be possible to employ a common field service staff and cut in half the spare parts inventory needed to support the two networks.⁸

Finally, the merger will greatly improve Level 3's balance sheet, resulting in a lower cost of capital attributed to providing services. In 2010, Level 3 generated \$853 million of EBITDA, but carried more than \$6 billion in debt (net of cash), which consumed over \$500 million in interest expense during the year, impeding its ability to invest in otherwise compelling capital projects. With the merger, the combined companies' net debt will be less than \$8 billion, but its post-synergy EBITDA is expected to be in excess of \$1.6 billion. Thus, Level 3's debt-to-EBITDA ratio will drop from over seven to less than five. This anticipated improvement in the leverage of the combined company is already being reflected in Level 3's lower cost of borrowing.⁹

Only two parties filed comments with respect to the Proposed Transaction, and neither argued that the Proposed Transaction will not produce public interest benefits. Instead, they argue—erroneously—that the Proposed Transaction creates public interest harms. The affirmative public interest benefits remain undisputed.

II. Neither Commenter Shows that the Proposed Transaction Would Disserve the Public Interest.

A. XO Fails to Demonstrate that the Proposed Transaction Would Harm Competition in the Market for Internet Connectivity.

⁸ *Id.* ¶ 10.

⁹ *Id.* ¶ 11.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

XO argues that post-transaction Level 3 will “have substantial market power and dominate other [Internet Backbone Providers (“IBPs”)] and their customers.”¹⁰ XO and its economist do not identify the market in which they believe the new Level 3 would be able to reduce “competition between IBPs” resulting “in higher prices and reduced innovation.”¹¹ Presumably XO contemplates the market for conveying traffic between entities such as content providers and ISPs over the Internet (which we will refer to as Internet Connectivity), or perhaps the service commonly referred to as “Internet transit,” which is one form of Internet Connectivity. Regardless of how this market is defined, however, XO has failed to present any plausible case that the combination of Level 3 and GCL will reduce competition such that the new Level 3 could raise price by a small but significant and non-transitory amount.

¹⁰ Comments of XO Communications, LLC at 4, IB Docket No. 11-78 (filed July 11, 2011) (“XO Comments”). XO also insinuates that the Proposed Transaction would expand foreign influence over U.S. telecommunications networks, XO Comments at 42, notwithstanding the fact that the Proposed Transaction actually returns GCL to U.S. management control and predominant U.S. ownership. *See, e.g.*, Level 3 Communications, Inc. at 15, Petition for Declaratory Ruling, IB Docket No. 11-78 (filed May 12, 2011) (“Level 3 Parent 310(b) Petition”). In fact, the resulting level of aggregate foreign ownership in Level 3 is presumed to serve the public interest. *See Rules and Policies on Foreign Participation in the U.S. Telecommunications Market, Market Entry and Regulation of Foreign-Affiliated Entities*, Report and Order and Order on Reconsideration, 12 FCC Rcd. 23,891, 23,913 ¶ 50 (1997) (“*Foreign Participation Order*”); Level 3 Parent 310(b) Petition at 12. Moreover, consistent with its longstanding practice, the Commission will defer to the Executive Branch on national security and related issues arising from a transaction. *See Foreign Participation Order*, 12 FCC Rcd. at 23,919 ¶ 63 (stating that “[w]e thus will continue to accord deference to the expertise of Executive Branch agencies in identifying and interpreting issues of concern related to national security, law enforcement, and foreign policy that are relevant to an application pending before us.”) Applicants anticipate that they will receive timely clearances from those Executive Branch agencies with respect to the Proposed Transaction.

¹¹ XO Comments at 4 (quoting William P. Rogerson, *Competitive Effects of the Proposed Level 3 Communications-Global Crossing Limited Transaction* at 4, White Paper, July 11, 2001 (“Rogerson White Paper”) (attached to XO Comments)).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

XO's theory is not that the combined companies could raise prices outright for transit services, but rather that they could either raise their rivals' costs or degrade their rivals' interconnection quality in order to drive their rivals' customers to become the combined companies' customers and, thus, because their network would then be more attractive than its rivals' networks, "tip" the market to the combined companies.¹² XO's tipping theory, however, ignores:

- Economic studies by Professors Marius Schwartz and David Maleug establishing that market shares of over 50 percent are a necessary, but not sufficient, condition for a profitable "tipping" strategy—market share levels that even XO does not argue exist here; and
- Renesys data showing that actually a very low percentage of Level 3 and GCL customers are single-homed customers to either of them or dual-homed only to Level 3 and GCL; at least 86 to 88 percent of the new Level 3's customers are connected to other providers and therefore able to instantly switch away from new Level 3 were it to start degrading their traffic.

The facts, in short, undercut XO's alleged concerns, as even accepting XO's flawed assertions about market share, new Level 3 will have neither the market share nor the unique customer connections necessary to tip successfully the Internet Connectivity market. Further, the Commission should not accept XO's assertions of market share, as they are contrived to substantially overstate the market significance of Level 3 and GCL. XO presents artificial market subsets—cherry-picking lists of "top 10" providers—and then treating these subsets as if they represented the entire market. More complete datasets produce much lower market shares,

¹² XO Comments at 35.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

with a proper analysis showing that the combined company would barely exceed 10 percent.

The actual numbers, in other words, demonstrate that XO's claims of potential competitive harm are baseless.

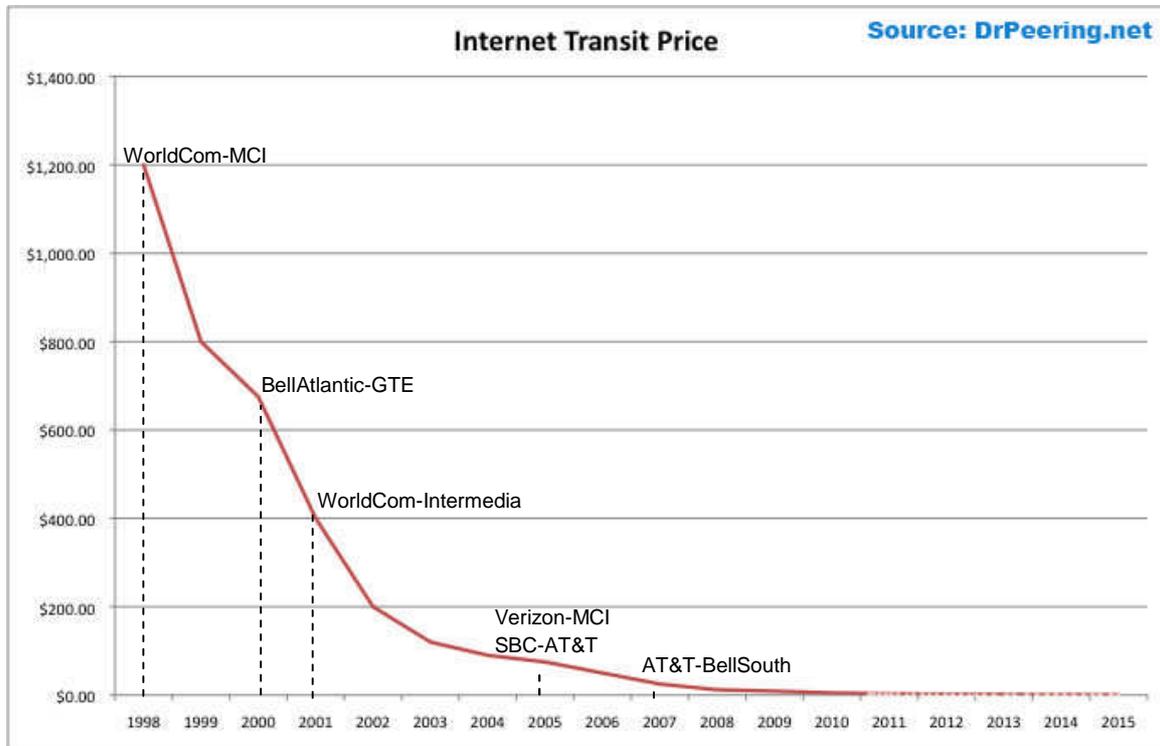
1. The Market for Internet Connectivity Has Changed Dramatically Since 1998, 2000, and 2005.

The Internet Connectivity market has changed dramatically over the last ten years. Tier 1 IBPs no longer play the primary role in connectivity that they did in the late 1990s and early 2000s. The market today includes all forms of arrangements to convey information over the Internet: settlement-free peering, paid peering, direct peering, Internet Exchange Points ("IXPs"), content delivery networks ("CDNs"), and transit.

The dramatic drop in transit prices since 1998 confirms the expanding market for Internet connectivity. Chart 1, below, illustrates this market shift, in conjunction with prior transactions involving IBPs.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

Chart 1: Internet Transit Price Change and Transactions, 1998-present



In 1998, when the Commission analyzed the WorldCom-MCI transaction, Internet Connectivity was dominated by just a few companies, all Tier 1 IBPs. But in the nearly 13 years since that transaction, the market has shifted. As estimated by DrPeering.net, wholesale prices have dropped, from \$1200 per Mbps per month when WorldCom acquired MCI in 1998 to \$25 in 2007 when AT&T acquired BellSouth.¹³ That trend has continued, and in 2010, U.S. average IP

¹³ DrPeering.net, Internet Transit Prices - Historical and Projected (last updated Aug. 2010), <http://drpeering.net/white-papers/Internet-Transit-Pricing-Historical-And-Projected.php> (“DrPeering.net”); see also *Application of WorldCom, Inc. & MCI Commcn’s Corp. for Transfer of Control of MCI Commcn’s Corp. to WorldCom, Inc.*, 13 FCC Rcd. 18025 (1998) and *AT&T Inc. & BellSouth Corp.*, 22 FCC Rcd. 5662 (2007) (“AT&T BellSouth Order”).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

transit prices were around \$5/Mbps per month.¹⁴ The prices of Level 3 and GCL reflect this trend.¹⁵

In light of this striking shift in the pricing of substitutes, old analyses concluding that Tier 1 IBPs constitute their own market are invalid. Over the last several years, customers have been able to shift away from buying transit from just a small number of IBPs that carried the vast majority of traffic. Today, “providers that used to charge content networks for transit now offer settlement-free interconnection or, in some cases, may even pay the content networks for access.”¹⁶ Today, a content provider and a consumer network that are direct peering—neither a Tier 1 IBP—may carry the same traffic volume as several Tier 1 IBPs.¹⁷ That same study found that the vast majority of Internet traffic flows directly between content providers, not through Tier 1 interconnection.¹⁸ This shift has been motivated by more than falling prices. The proliferation of bandwidth-hungry content—including online video—has led CDNs, among others, to seek a decentralized approach that can accommodate that content.¹⁹

¹⁴ DrPeering.net; *see also* TeleGeography, *Global Internet Geography – Regional Analysis: United States* at 13-18 (“*TeleGeography Regional Analysis*”) (noting that using list prices overstates the average, because actual negotiated IP transit prices are lower than the list prices on which TeleGeography’s estimate is based).

¹⁵ Level 3 Declaration at ¶ 12; Declaration of David Siegel, Global Crossing Ltd, at ¶ 5 (“Global Crossing Declaration”) (attached as Exhibit 2).

¹⁶ Craig Labovitz, Danny McPherson, and Scott Iekel-Johnson, Arbor Networks, *ATLAS Internet Observatory 2009 Annual Report* at 2 (“*ATLAS Report*”); *see also* TeleGeography, *Global Internet Geography: Executive Summary* at 7, available at http://www.telegeography.com/page_attachments/products/website/research-services/global-internet-geography/0001/6811/telegeography-global-internet.pdf (“*TeleGeography Executive Summary*”) (attached as Exhibit 3).

¹⁷ *ATLAS Report* at 5.

¹⁸ *Id.*

¹⁹ *See* Akamai, White Paper, “How Will the Internet Scale?” at 1, available at http://www.akamai.com/html/perspectives/whitepapers_content.html (attached as Exhibit 4).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

XO's comments acknowledge the changes in the market that explain why Tier 1 IBPs no longer have the market to themselves. And XO notes the development of new ways to move traffic that compete with transit, including direct peering, CDNs, and IXPs.²⁰ For years, industry has recognized that direct peering, CDNs, and IXPs offer transit customers ways to bypass middleman backbones—and that these developments are responsible for the reduced price of transit.²¹ Though customers may still purchase transit, they can reduce their transit purchases, either in small or large amounts, by choosing these alternatives, which further reduces the price of transit.²² Indeed, XO itself uses IXPs for transit.²³

XO nonetheless ignores these market developments in its competitive analysis. Instead, XO argues in support of a rigidly defined hierarchical market divided into a small number of Tier 1 backbones and transit customers, when the record evidence shows that such a market structure no longer exists. The Commission should recognize that the market for Internet Connectivity has not evolved in the last 13 years and analyze the Proposed Transaction accordingly.

2. The Proposed Transaction Will Not Plausibly Permit the New Level 3 to Raise Internet Connectivity Prices or “Tip” the Market through Interconnection Degradation.

²⁰ XO Comments at 12.

²¹ See *ATLAS Report* at 1, *TeleGeography Executive Summary* at 7; see also Stanley Besen, Paul Milgrom, Bridger Mitchell and Padmanabhan Srinagesh, “Advances in Routing Technologies and Internet Peering Agreements,” *American Economic Review Papers and Proceedings*, 91(2), 292 (2001) (“Besen *et al.*”).

²² Level 3 Declaration at ¶¶ 14-19.

²³ Declaration of Marcellus Nixon at ¶ 7 (attached to XO Comments) (“Nixon Declaration”).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

a. The Proposed Transaction Will Not Reverse the Market Developments that Have Led Transit Prices to Drop by Over 99 Percent Since 1998.

The Proposed Transaction will not reverse the trend of the last decade towards lower transit prices. Other IBPs, as well as CDNs and IXPs, provide alternative means of connectivity which the Proposed Transaction will leave entirely unaffected. As noted above, content providers—those most in need of transit—have begun bypassing Tier 1 IBPs and other transit providers altogether, in favor of purchasing their own physical network assets (“dark fiber”) and arranging direct interconnection with consumer networks. CDNs provide another alternative, storing content at multiple locations around the globe and closer to end users, reducing the need for transit and other capacity and further driving the price of transit down. Besen *et al.* discuss this effect in terms of “secondary peering” and note that the bargaining advantage—and, consequently, effective market share—of a top-level backbone will be reduced as its customers’ traffic that would ordinarily travel from one core IBP to another travels instead via secondary peering interfaces.²⁴ The result is similar to the market-share diluting effect of multihoming, as discussed in greater detail in Part II.A.2.b below.

Rather than denying these market changes, XO acknowledges that it facilitates such alternatives, providing transit to CDNs and interconnecting at IXPs.²⁵ Despite this acknowledgement, however, XO still contends that the Proposed Transaction will lead to higher prices for end users. That assertion is lacks any support, as XO fails to offer any plausible mechanism by which new Level 3 could raise prices. The Proposed Transaction will have no effect on the myriad of transit alternatives to settlement-free peering between Tier 1 IBPs.

²⁴ Besen *et al.* at 295.

²⁵ Nixon Declaration at ¶ 7.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

Content providers will continue to arrange for direct interconnection; capacity needs will continue to decline as CDNs proliferate. While settlement-free peering will remain one kind of transit arrangement, it will be an increasingly less important one. The Proposed Transaction will allow Level 3 and GCL to increase efficiency and continue the trend towards lower costs as those efficiencies are passed on to consumers in a highly-competitive Internet Connectivity market.

b. Level 3 and GCL Each Have Very High Levels of Multi-Homed Customers, Thereby Constraining the Combined Company's Ability to Raise Prices or "Tip" the Market.

XO concedes that in order for "tipping" to be possible, a provider must "control[] a disproportionate amount of Tier 1 traffic, especially traffic exchanged with unique customers."²⁶

XO, however, never establishes that this baseline requirement is met.

As Besen *et al.* explain:

Traffic that crosses a peering interface between two core ISP's in a rigidly hierarchical Internet is able to take an alternative path from the origin to the destination after the secondary peering or multi-homing arrangement is implemented. The diverted traffic cannot be degraded by changes in the peering arrangement between the two core ISP's and is therefore of high quality. Both networks experience high quality on the same volume of diverted traffic. This fixed traffic volume is a larger proportion of the smaller backbone's total traffic, leading to a greater proportionate increase for the smaller backbone in the proportion of traffic that is of high quality, and reducing the larger backbone's relative service quality σ_1/σ_2 which, as seen in (5), reduces its ability to extract bargaining concessions from its smaller partner. Increases in multi-homing, like increases in the extent of secondary peering, are equivalent for this analysis to a loss of market share for the larger backbone provider.²⁷

²⁶ *Id.* ¶ 23.

²⁷ Besen *et al.* at 295. Professor Rogerson cites this article as an example of the discussion of tipping in the academic economics literature. See Rogerson White Paper at 3 n.6.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

In other words, “[s]uppose that ISP₁ degrades its peering interface with ISP₂. Multi-homed subscribers will continue to obtain high quality on all their traffic.”²⁸ Thus, if most customers of Level 3 and GCL are multihomed with providers other than Level 3 and GCL, tipping cannot be successful.

Had XO actually reviewed Renesys data, instead of relying only on Renesys blogs, XO would have discovered that, according to Renesys, only approximately 10 percent of the combined customers of Level 3 and GCL are single-homed to either Level 3 or GCL – denoted as “critically dependent facilities.”²⁹ The term “critically dependent facilities” as used by Renesys, however, is not equivalent to “single homed.” “Critically dependent facilities” are customers that, for 95 percent of the time in question, purchased transit only from one provider. They may use not only their one transit provider to reach the internet but in fact may also use peers to reach the Internet. Thus, this number is likely overstated, because included among the entities Renesys indicates are single-homed to Level 3 or GCL are worldwide carriers such as Telefonica that clearly have other means of routing traffic around the Internet, such as peering.³⁰ In addition, the same data shows that only 2 to 4 percent of the combined customers of Level 3 and GCL are dual-homed only to Level 3 and GCL.³¹ This means that at least 86 to 88 percent of combined customers of Level 3 and GCL are multihomed to IBPs other than Level 3 and GCL. Accordingly, the high levels of multihomed Level 3 and GCL customers disproves XO’s “tipping” theory.

²⁸ Besen *et al.* at 295.

²⁹ Level 3 Declaration at ¶ 20.

³⁰ *Id.*

³¹ *Id.*

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

c. XO Also Ignores Economic Literature Showing that Tipping Is Not Possible, Even at XO's Claimed Post-Transaction Market Shares.

Just as XO ignores the economic literature regarding the significance of multihoming with respect to “tipping” theories, XO also ignores the economic literature regarding the size of market share necessary to make interconnection degradation profitable, as well as the impact of secondary peering arrangements and CDNs on a “large” backbone’s ability to exercise market power. All of these gaps further render XO’s “tipping” arguments implausible.

Professors Marius Schwartz and David Maleug examined the conditions under which denying or degrading interconnection could be a profitable competitive strategy. They concluded, “An installed-base share of at least 50% is necessary but not sufficient to make autarky [*i.e.*, incompatibility with smaller rivals] unambiguously profitable.”³² Furthermore, “[i]n rapidly growing markets, an autarky strategy can be unprofitable even if the largest firm controls well over half the installed base.”³³

Notably, XO’s posited market share for the post-transaction Level 3 (which is inaccurate, as discussed in Part II.A.2.d below) is only a maximum of 35 percent—far less than 50 percent. XO fails entirely to present any analysis rebutting Schwartz and Maleug’s conclusion that a

³² Marius Schwartz and David Maleug, “Compatibility Incentives of a Large Network Facing Multiple Rivals,” *Journal of Industrial Economics*, 54(4), 527, 531 (2006) (“Schwartz and Maleug, *Journal of Industrial Economics*”). *See also* Marius Schwartz and David Maleug, “Interconnection Incentives of a Large Network,” Working Paper 01-05, at ii and 33 (2002), *available at* <http://www9.georgetown.edu/faculty/schwarm2/papers/interconnectionincentives.pdf> (“Holding 1’s share of the installed base (m_1) constant—even at high levels such as 70%—an increase in n expands monotonically the set of parameter values for which, if firm 1 pursued global degradation, the unique equilibrium would be tipping *away* from firm 1” and “Our findings suggest that the theoretical analysis alone does not offer a solid basis for concern with degradation of interconnection unless the largest network’s market share is quite large, significantly above fifty percent.”).

³³ Schwartz and Maleug, *Journal of Industrial Economics* at 559.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

minimum share of 50 percent is necessary for “tipping” even to be possible. In addition, the number of U.S. competitors is large: among the top 100 “most connected” networks in Renesys, 38 sell transit or offer peering on a national basis using an IP backbone.³⁴ Under these conditions, Schwartz and Maleug’s analysis suggests that “tipping” to Level 3 is even less likely.

Further buttressing the conclusion that tipping is unlikely is Besen *et al.*’s examination of the impact of “secondary peering” and CDNs. Besen *et al.* describe “secondary peering” as situations in which “the participating networks directly exchange traffic destined to each other’s customers on a bill-and-keep basis, bypassing the core ISP’s.”³⁵ They conclude, “Increases in the extent of secondary peering are similar to reductions in the market share of a dominant core ISP.”³⁶ Like multi-homed traffic, this traffic cannot be degraded between a dominant backbone provider and other backbone providers—in this case, because the traffic no longer flows through that interconnection.³⁷ Besen *et al.* concluded that intelligent caching and CDNs likewise reduce a dominant core ISPs effective market share.³⁸ XO takes none of this into account.

d. XO’s “Market Share” Calculations Are Unreliable and Overstated.

Using a limited subset of data from both a Renesys blog and from XO’s own IP traffic exchanges, XO attempts to calculate market shares and to show that the post-transaction Level 3 would dwarf all other providers of backbone connectivity. Although even XO’s highest combined market share of 35 percent is inadequate to show that “tipping” is plausible, XO

³⁴ Level 3 Declaration at ¶ 13.

³⁵ Besen *et al.* at 292.

³⁶ *Id.* at 295.

³⁷ *See id.* at 294-5.

³⁸ *Id.* at 296.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

substantially overstates the market shares of Level 3 and GCL, even of the market as XO defines it.

XO bases its first calculation of market share on data drawn from two Renesys blogs, rather than from the complete Renesys dataset.³⁹ The use of the blogs to create a “Top Ten” list rather than the Renesys dataset itself artificially constrains the universe of competitors examined; by contrast the Renesys dataset lists hundreds of autonomous systems.⁴⁰ XO’s reliance on the Top Ten list is even more curious because one of the blogs XO cites links to a third blog that contains a “Top Thirteen” list (which Renesys calls “A Baker’s Dozen”).⁴¹ In contrast to the United States Department of Justice in its analysis of WorldCom-Intermedia, XO makes no effort to demonstrate that its Top 10 represents all, or nearly all, Internet traffic.⁴² Of course, if providers outside the XO Top 10 have a significant percentage of Internet traffic, XO’s Top 10 will substantially inflate market shares of shares for the included providers. Without a

³⁹ See Rogerson White Paper at 5 n.9 (stating that “The specific data used in this study was provided by Renesys in blog entries on the Level 3/Global Crossing transaction and Qwest/Savvis transaction” (citing Renesys Blog, “Level Crossing” (Apr. 14, 2011), <http://www.renesys.com/blog/2011/04/level-crossing.shtml>, and “Quavis: The Battle for Second,” (Apr. 29, 2011), <http://www.renesys.com/blog/2011/04/qwawvis-the-battle-for-second.shtml#more>)).

⁴⁰ Level 3 Declaration at ¶ 13.

⁴¹ Renesys Blog, “A Baker’s Dozen, 2010 Edition” (Jan. 10, 2011), <http://www.renesys.com/blog/2011/01/a-bakers-dozen-2010-edition.shtml>. By cutting the “Baker’s Dozen” down to a “Top Ten,” XO apparently discarded at least three of the following four backbone providers: AT&T, China Telecom, Cogent and Qwest. Compare “A Baker’s Dozen” with Rogerson White Paper at Table 1 (which has one unidentified provider).

⁴² Cf. *United States v. WorldCom and Intermedia*, Competitive Impact Statement, <http://www.justice.gov/atr/cases/f7100/7183.htm> (evaluating UUNet’s share among the top 15 Internet backbones in the United States, which represented 95 percent of all U.S. dedicated Internet access revenues).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

demonstration that the Top 10 represent anything more than a fraction of the Internet Connectivity market, XO's Top 10 list is simply irrelevant.

Furthermore, Renesys does not measure traffic, but simply counts the number of other autonomous systems with which a given autonomous system connects, either itself or through lower level entities with whom it connects, then applies a nonpublic formula to estimate the "quantity of IP space" to which the network is directly or indirectly connected.⁴³ Professor Rogerson converts these autonomous system connection rankings into estimated shares of traffic by simply assuming that "each firm's traffic is relatively proportional to the number of Internet addresses it serves."⁴⁴ But XO provides no support for Professor Rogerson's assumption, and neither of its declarants validate it. Just as the number of Facebook "friends" is not a measure of popularity, having lots of connections between autonomous systems does not mean lots of traffic or lots of revenue.⁴⁵

Renesys' data contains several other features that make it a misleading source for computing market share. First, as Professor Rogerson acknowledges by attempting to factor out multihoming,⁴⁶ multihoming leads Renesys to double count connections to certain customers.⁴⁷ Second, Renesys compiles its rankings by autonomous system. Although Level 3 and GCL each operate only one global autonomous system, other major providers, such as AT&T, Verizon and Comcast, operate several, and thus have their total connectivity split among several autonomous

⁴³ Level 3 Declaration at ¶ 21.

⁴⁴ Rogerson White Paper at 6.

⁴⁵ Level 3 Declaration at ¶ 21.

⁴⁶ Rogerson White Paper at 5.

⁴⁷ Level 3 Declaration at ¶ 21.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

systems.⁴⁸ Professor Rogerson does not even attempt to address this flaw in the data on the Renesys blog.

Just correcting for the failure to aggregate commonly-owned autonomous systems and including providers beyond the Top 10 paints a dramatically different picture of the Internet Connectivity market. TeleGeography also publishes rankings by number of autonomous system connections (which again are not market share or traffic rankings), but which aggregate commonly-owned autonomous systems. Using just the top 50 from TeleGeography’s worldwide 2009 rankings (Table 1 below) shows Level 3 third with under 8 percent of autonomous systems links and GCL eighth with under 4 percent of autonomous systems connections. Even combined, Level 3 and GCL have at most only 11 percent of the autonomous system connections among the Top 50 providers⁴⁹—a far cry from XO’s claims of 35 percent market share.

Table 1: TeleGeography 2009 Worldwide Rankings, Top 50 Entities

Provider	AS connections	% of AS Connections
AT&T	3,038	8.86%
Verizon	2,840	8.28%
Level 3	2,586	7.54%
Cogent	2,299	6.70%
Sprint	1,486	4.33%
Time Warner	1,440	4.20%
Qwest	1,398	4.08%
GCL	1,284	3.74%
Hurricane Electric	1,069	3.12%
InterNAP	820	2.39%
Others	16,044	46.77%
Total	34,304	100.00%

⁴⁸ *Id.*

⁴⁹ When eliminating the double-counting of connections that both Level 3 and GCL have, the combined company has closer to 9 to 10 percent of the autonomous system connections among the Top 50 providers. Level 3 Declaration at ¶ 22.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

With respect to XO's attempts to derive market shares based on the traffic XO exchanges with other backbones, XO once again fails to demonstrate any relevance of its self-serving numbers. First, as Professor Rogerson acknowledges, these calculations assume that "each firm's total traffic is relatively proportional to the amount of traffic it exchanges with XO."⁵⁰ There is, however, no basis on which to believe that would be true. Second, Professor Rogerson calculates shares based on XO's "top ten" backbones, but nowhere does XO disclose the amount of traffic exchanged with the "top ten" backbones as a percentage of XO's overall traffic. Professor Rogerson's estimated market shares add up to 100 percent only because the universe he considered is just the "top ten." By that methodology, even if Level 3 and GCL were deemed to have 100 percent of the market of the top two, that statistic still would provide no insight into the competitiveness of the market overall or the relative shares among all market participants.⁵¹

The Commission need not calculate market shares, given that XO fails to demonstrate any anticompetitive impact even at its maximum claimed market shares. Should the Commission wish to do so, however, it should assess a provider's share of total traffic delivered to North American Internet users. This would count traffic of both peers and transit customers, as well as traffic delivered through CDNs or direct peering, but avoid double counting or missing traffic for which there is no charge (as would happen with a revenue-based analysis) The Declaration of Nicolas Pujet describes such a methodology.

⁵⁰ Rogerson White Paper at 8.

⁵¹ As a matter of comparison, the *ATLAS Report*, which uses a traffic-based methodology that estimates Internet traffic as it crosses the boundaries between IP backbone networks, notes that its "Top Ten" have a combined market share of just under 41 percent, with Level 3 and GCL each having market share in the single digits. *ATLAS Report* at 6. And that report acknowledges that its analysis might include "double-counting of the same traffic flow crossing multiple provider boundaries, and extrapolation of data from a small sample of anonymous providers." *Id.* at 3.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

Using this methodology, Level 3 estimates that it delivered approximately [REDACTED] percent of the nearly 84 million terabytes of North American Internet traffic delivered to end users in 2010.⁵² Similarly, GCL estimates that it delivered approximately [REDACTED] percent of that North American Internet traffic.⁵³ Thus, the combined share of the new Level 3 remains a small fraction of the entire market, and can present no likelihood of harm to competition in the market for Internet Connectivity.

e. XO's Claims that Multiple "Hops" Degrade Quality Are Both Unsupported and Technically Incorrect.

XO suggests that lack of direct interconnection will tend to reduce quality.⁵⁴ For this technical proposition, XO relies on Professor Rogerson, who is an economist but not an engineer.⁵⁵ Notably, neither XO's Director of IP Network Planning nor its Chief Technology Officer makes any sworn statements that lack of direct interconnection significantly impedes service quality.⁵⁶ Nor could they do so, because it is not true.

Service quality is not primarily determined by the number of interconnection points transited ("network hops"), but mostly by the distance traveled and the congestion within the networks that the traffic traverses, which can be easily alleviated by competitors by deploying additional equipment.⁵⁷ Level 3 loses most of the Internet service opportunities it bids on to

⁵² The Cisco VNI Index estimates that total North American Internet traffic delivered to end-users in 2010 was 83,976,000 terabits. Level 3 Declaration at ¶¶ 28-29.

⁵³ Global Crossing Declaration at ¶ 6

⁵⁴ XO Comments at 35.

⁵⁵ *Id.*

⁵⁶ See Nixon Declaration and Declaration of Randolph Nicklas (attached to XO Comments).

⁵⁷ Level 3 Declaration at ¶ 31.

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

networks with significantly more network hops than Level 3.⁵⁸ This is yet another example of XO's failure to lay a sound factual or analytical foundation for its claims.

* * *

XO's claims of harm to competition fail across the board. Not only has XO failed to demonstrate that Level 3 and GCL will have dominant market shares as a result of the Proposed Transaction, but even at the levels of market share that they claim would exist, economic theory and the prevalence of multihoming among the combined entity's customers show that "tipping" cannot occur.

B. Pac-West Raises Issues Outside the Scope of the Commission's Transaction Review.

Pac-West's opposition focuses primarily on issues which the Commission is already addressing in a separate proceeding. Four days before Pac-West filed its comments in this proceeding, the Commission released a public notice seeking comment on whether Pac-West is entitled to any compensation for toll-free origination pursuant to its tariffs.⁵⁹ That proceeding will address the facial validity of the very tariff under which Pac-West seeks payment from Level 3.⁶⁰ Pac-West's claims are therefore particularly inappropriate for resolution in the context of these applications. The applicability of access charges to VoIP traffic is likewise a question before the Commission in an ongoing proceeding.⁶¹ Where issues are raised in response to a

⁵⁸ *Id.*

⁵⁹ *Pleading Cycle Established For Comments On Pac-West Telecomm, Inc. And Verizon Petitions For Declaratory Ruling.*

⁶⁰ Verizon, Petition for Declaratory Ruling, WC Docket No. 11-115 (filed June 28, 2011).

⁶¹ *Connect America Fund, A National Broadband Plan for Our Future, Establishing Just and Reasonable Rates for Local Exchange Carriers, High-Cost Universal Service Support,*

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

transaction review by the Commission that are already being addressed in ongoing proceedings, the Commission's practice is to defer those issues to the other pending proceedings.⁶² It should do so here as well.

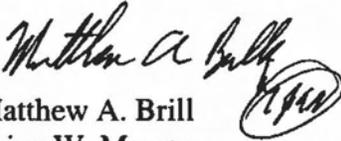
Developing an Unified Intercarrier Compensation Regime, Federal-State Joint Board on Universal Service, Lifeline and Link-Up, Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking, 26 FCC Rcd. 4554 (2011).

⁶² See e.g., *Applications of Comcast Corp., Gen. Elec. Co. & NBC Universal, Inc.*, 26 FCC Rcd. 4238, 4516 n.299 (2011) (“To the extent commenters raise concerns regarding the Commission's program carriage rules more generally, we note that the Commission has an open rulemaking proceeding regarding these issues. We defer discussion of the Commission's program carriage rules to the larger rulemaking proceeding.”); see also *AT&T-BellSouth Order*, 22 FCC Rcd. at 5696 ¶ 60 & n.172; *SBC Commc'ns Inc. & AT&T Corp. Applications for Approval of Transfer of Control*, 20 FCC Rcd. 18,290, 18,320 ¶ 55 & n.161 (2005); *Verizon Commc'ns Inc. & MCI, Inc. Applications for Approval of Transfer of Control*, 20 FCC Rcd. 18,433, 18,462 ¶ 55 & n.157 (2005).

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

CONCLUSION

Because the Proposed Transaction will yield undisputed, merger-specific public interest benefits, and there are no plausible claims of public interest harms, the Commission should promptly grant Applicants' requests for consent to transfer of control, and for a finding that a combined indirect foreign ownership of common carrier wireless licenses exceeding 25 percent would be in the public interest.

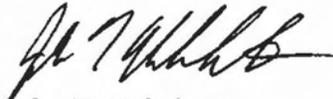

Matthew A. Brill
Brian W. Murray
LATHAM & WATKINS LLP
555 11th Street, N.W., Suite 1000
Washington, D.C. 20004
+1 202 637 2200 tel

*Counsel for Global Crossing Limited
and Its Subsidiaries*

21 July 2011

Attachments

Respectfully submitted,


John T. Nakahata
Kent D. Bressie
Brita Dagmar Strandberg
Kristine Laudadio Devine
WILTSHIRE & GRANNIS LLP
1200 18th Street, N.W., Suite 1200
Washington, D.C. 20036-2516
+1 202 730 1300 tel

*Counsel for Level 3 Communications, Inc. and
Its Subsidiaries*

**SUBJECT TO REQUEST FOR CONFIDENTIAL TREATMENT
PURSUANT TO 47 C.F.R. §§ 0.457 AND 0.459**

LIST OF EXHIBITS

- Exhibit 1** **Declaration of Nicolas Pujet, Level 3 Communications, Inc.**
- Exhibit 2** **Declaration of David Siegel, Global Crossing Limited**
- Exhibit 3** **TeleGeography, *Global Internet Geography – Executive Summary***
- Exhibit 4** **Akamai, White Paper, *How Will the Internet Scale?***