Comments of AT&T on the European Commission's Public Consultation on Specific Aspects of Transparency, Traffic Management and Switching in an Open Internet

October 15, 2012

Introduction and Summary

The affiliates of AT&T Inc. that provide communications services to, from and within European Union Member States (collectively, "AT&T") respectfully submit these comments on the European Commission Consultation on specific aspects of transparency, traffic management and switching in an Open Internet (the "Consultation").

Operating globally under the AT&T brand, AT&T's parent, AT&T Inc., through its affiliates, is a worldwide provider of Internet Protocol (IP)-based communications services to businesses and a leading U.S. provider of wireless, high speed Internet access, local and long distance voice, and directory publishing and advertising services, and a growing provider of IPTV entertainment offerings. With operations in countries that cover over 97% of the world's economy, AT&T Inc. has extensive experience as an incumbent and a new entrant, as a fixed line operator and a mobile operator, and in the dynamic areas of converged technologies and services. In the EU Member States, AT&T Inc., through its affiliates, is a competitive provider of business connectivity and managed network services and is a leading provider of bilateral connectivity services linking the EU Member States with the United States.

AT&T welcomes this public consultation and appreciates the opportunity to express its views concerning IP Interconnection, which is addressed by Question 24 of the Questionnaire.[1] As described in more detail below, AT&T is aware of no problems regarding IP interconnection arrangements that are likely to have any material impact on the quality of the best effort Internet or any specific issues related to the integration of ISPs and transit providers. Internet traffic arrangements are negotiated in highly competitive markets, in which prices for transit services are continually declining, Internet traffic volumes are continually increasing, there are many options for ISPs and content providers to exchange

[1] *See* Question 24(a) ("In your view, are there any problems regarding IP interconnection arrangements (between network operators, ISPs, transit providers and/or content providers) that could have an impact on the quality of the best effort Internet?) & Question 24(b)("Are there any specific issues related to the vertical integration of ISPs and transit providers?").

traffic and reach users quickly and reliably, and no Internet backbone providers possess market power. By encouraging the rapid growth of Internet connectivity throughout the world, these arrangements are a major reason for the phenomenal success of the modern Internet.

The effectiveness of Internet traffic arrangements results in substantial part from the absence of prescriptive regulation that would lock into place specific technologies and business models and increase cost. Governments and regulators have generally recognized that these arrangements are commercial transactions negotiated in a competitive marketplace and require neither regulation nor detailed oversight to ensure that consumers and other users are properly served. Regulation of these arrangements is unnecessary, because the large number of indirect interconnection alternatives gives all networks strong incentives to reach efficient interconnection arrangements and thus ensures continued end-to-end connectivity. BEREC has observed that "[peering and transit interconnection] agreements have been largely outside the scope of activity of National Regulatory Authorities (NRAs). This appeared justified in particular due to the competitiveness of the transit market on IP backbones."[2] Similarly, BEREC's recent consultation paper on IP interconnection finds that "[t[he market has developed very well so far without any significant regulatory intervention."[3] AT&T hopes that all regulators will share this assessment and will work to preserve today's unregulated Internet and the very significant user benefits that stem from its resulting dynamism, innovation, and flexibility.

Some countries and operators, however, wish to replace current commercially-negotiated Internet traffic arrangements with a "sending network pays" or similar regulatory model designed to subsidize the build-out of Internet network infrastructure and seek revisions to the ITU International Telecommunications Regulations to require the adoption of this radically different approach. Although doubtless well-intentioned, such measures would significantly harm rather than assist the future development of the Internet. They would likely suppress Internet traffic flows and investment incentives, reduce connectivity to

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[2] BEREC, *Response to the Commission Questionnaire on Net Neutrality* (BEREC(10)42.

[3] BEREC, Draft Report for public consultation, *An assessment of IP-interconnection in the context of Net Neutrality* (BoR(12)33) ("BEREC Consultation Paper"), at 50. See also, Dennis Weller, ITU GSR 2012 Discussion Paper, *Blurring Boundaries: Global and Regional IP Interconnection*, at 19 ("The irony of regulation in markets for interconnection is that the very tools that are available to policy makers to address perceived market failures also create and perpetuate market failures. This does not mean that such tools should never be used, but it does strongly suggest that the threshold for imposing them should be very high. The speed at which the Internet ecosystem continues to evolve is another cause for concern, as any regulation is likely to be obsolete before it can be adopted.")

countries adopting such regulation, and require destination-specific pricing for consumer Internet usage that would radically change the current user Internet experience. Thus, a recent paper by the Internet Society similarly finds "no merit in the proposals to incorporate a sending-party network pays settlement regime into the text of the ITRs."[4] Rather than adopt such misguided measures, countries that claim to require these subsidies to expand their Internet infrastructure should be encouraged to achieve this result by following the path successfully taken by many other countries of adopting the pro-competitive telecom liberalization and privatization policies recommended by the World Bank, UNCDAD and other expert observers.

A further current concern is the need for regulators to avoid other unnecessary intervention in Internet traffic markets, such as by requiring the reporting of information concerning IP peering or transit arrangements. AT&T shares the concerns recently noted by BEREC that any regulatory intervention, however light-handed, may have unintended adverse consequences.[5] In the absence of any market failure or other systemic problem in Internet interconnection markets requiring detailed regulatory oversight, there is no reason for any regulator to require the reporting of such information. Regulators may expand their knowledge of these markets from publicly available data and reports and may collect information for use in dispute settlement in a more efficient, timely and less burdensome manner in response to specific disputes. Because of these concerns, AT&T has joined Verizon in seeking the annulment of a regulation recently issued by the French regulator, ARCEP, requiring the filing of semi-annual reports on wholesale Internet traffic practices.[6] AT&T hopes that regulators will instead follow a cautious approach toward such measures as advised by BEREC, which has recently noted that "[a]ny measure could be potentially harmful" and therefore "should be carefully considered."[7]

AT&T describes its views on these matters in more detail below.

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[4] Internet Society, *Internet Interconnections*, www.internetsociety.org., at 8.

[5] *See* BEREC Consultation Paper at 50.

[6] *See* Verizon and AT&T Joint Statement Regarding ARCEP's Attempt to Regulate Internet Peering and Transit Agreements, available at: http://www.attpublicpolicy.eu/2012/06/verizon-and-att-statement-regarding-arceps-attempt-to-regulate-internet-peering-and-transit-agreements/.

[7] BEREC Consultation Paper at 50.

1. INTERNET INTERCONNECTION MARKETS REQUIRE NEITHER REGULATION NOR DETAILED OVERSIGHT

Internet interconnection markets handle massive, exponentially growing traffic volumes, and have changed significantly and continually as the Internet itself has changed in response to huge increases in the numbers of Internet users (1.8 billion in 2010, with 5 billion users expected by 2020), the massive growth of new Internet services, applications and devices, and the ongoing evolution of the Internet ecosystem. By any measure, these markets are highly competitive, with many options for ISPs and content providers to exchange traffic, and continual reductions in prices ensuring that application and content providers can reach users quickly and reliably.

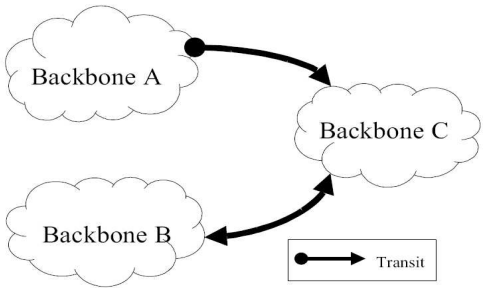
***Peering and Transit*:** Internet networks exchange traffic on the basis of unregulated private agreements that traditionally follow one of two business models: peering and transit. Under a transit agreement, Network X becomes a customer of Network Y and pays it to arrange delivery of Network X's packets *to any destination on the Internet* and to accept delivery of packets destined for Network X's customers *from any location on the Internet*.[8] In contrast, under a peering agreement, two networks interconnect for the purpose of exchanging packets sent from customers served by one peer to customers served by the other peer.[9] A U.S. Federal Communications Commission white paper from 2000 summarizes the defining difference between these two models:

> In [the figure below], backbone A is a transit customer of backbone C; thus, the customers of backbone A have access both to the customers of backbone C as well as to the customers of all peering partners of backbone C, such as backbone B. If backbone A and backbone C were peering partners, … backbone C would not accept traffic from backbone A that was destined for backbone B.[10]

[8] Michael Kende, *The Digital Handshake: Connecting Internet Backbones*, FCC Office of Plans and Policy, OPP Working Paper No. 32, at 7 (Sept. 2000), http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp32.pdf ("*Kende Paper*") ("[U]nlike in a peering relationship, with transit, the backbone selling the transit services will route traffic from the transit customer to its peering partners").

[9] In this context, "customer served by a peer" means that the ultimate end user recipient of given IP packets subscribes either to the peer's network itself or to another network that buys transit services from the peer's network.

[10] *Kende Paper*, *supra* note 10, at 7.



This peering and transit regime encompasses interconnection agreements among *all* of the Internet's constituent IP networks, not just those between "backbone" networks (which provide long-haul transmission services over high-capacity facilities). In the 1990s, most Internet service providers ("ISPs") exchanged traffic indirectly by purchasing transit services from backbone networks; the backbone networks interconnected directly with one another and thereby connected their respective ISP customers indirectly. Today, the Internet is less hierarchical in the sense that, while most ISPs still purchase transit services from backbones, many ISPs enter into a range of peering arrangements in their own right—with one another, with backbones, and with "content-delivery networks" (CDNs), which store content in cache servers close to interconnection points with individual ISPs.[11] In short, peering and transit are not concepts confined to traditional "backbone" networks; instead, those concepts encompass a broad range of bilateral interconnection relationships between diverse IP networks performing various roles throughout the Internet ecosystem.

Peering arrangements between similar IP networks often anticipate, among other things, that the traffic exchanged between the two networks will be roughly in balance, such that each network will incur roughly the same costs in handling the traffic originated by the other network. To avoid administrative overhead, parties to these bilateral peering agreements typically forgo the mutual exchange of compensation and peer on a *settlement-free* basis. But in some cases, where the traffic volumes exchanged have become unequal, or where one network no longer meets each element of the other's relevant peering criteria, the parties may enter into a *paid peering* arrangement. Under paid peering, the networks still exchange traffic through high-capacity peering links, but one network makes payments to the other. As discussed below, the paying party has abundant alternatives to paid peering if it

[11] *See generally* Peyman Faratin, David Clark *et al.*, *The Growing Complexity of Internet Interconnection*, 72 Communications & Strategies 51, at 55 (4Q 2008) ("*Faratin & Clark*"); Christopher S. Yoo, *Innovations in the Internet's Architecture that Challenge the Status Quo*, 8 J. Telecomm. & High Tech. Law 79 (2010); Stanley M. Besen, et al., *Evaluating the Competitive Effects of Mergers of Internet Backbone Providers*, 2 *ACM Transactions on Internet Technology* 187, at 189-90 (2002).

does not wish to pay the price charged by the other network. For example, in the diagram above, if network A does not wish to pay network B's price for direct interconnection, it can buy transit services from network C (among many other transit alternatives), and C will then deliver A's traffic to B as part of C's own peering arrangement with B.

From their inception, these peering and transit relationships have been unregulated, and the marketplace for peering and transit services in particular has functioned with extraordinary efficiency. This is highlighted by the predominance of handshake agreements, with 99.5% of all peering agreements being concluded on this basis, based on a recent survey conducted for the OECD, which allows great flexibility, and also "shows that network operators aim at minimizing transaction costs."[12]

Because larger IP networks compete vigorously for the transit business of smaller ones, transit prices have plummeted dramatically over the past dozen years, falling from approximately $1200/Mbps in 1998 to approximately $5/Mbps in 2010[13] and further still in 2011 and 2012.[14] Indeed, TeleGeography reports that the lowest transit prices are now "*50 cents per Mbps or less in the U.S. and western Europe*,"[15] and that, in recent years, the decline in transit prices has accelerated and is predicted to continue.[16] As described in the May 2011 study by Analysys Mason, *Overview of Recent Changes in the IP Interconnection Ecosystem*,[17] in recent years massive increases in Internet traffic, bandwidth and the value

[12] BEREC Consultation Paper at 43.

[13] DrPeering International, *Internet Transit Prices - Historical and Projected* (Aug. 2010), http://drpeering.net/white-papers/Internet-Transit-Pricing-Historical-And-Projected.php.

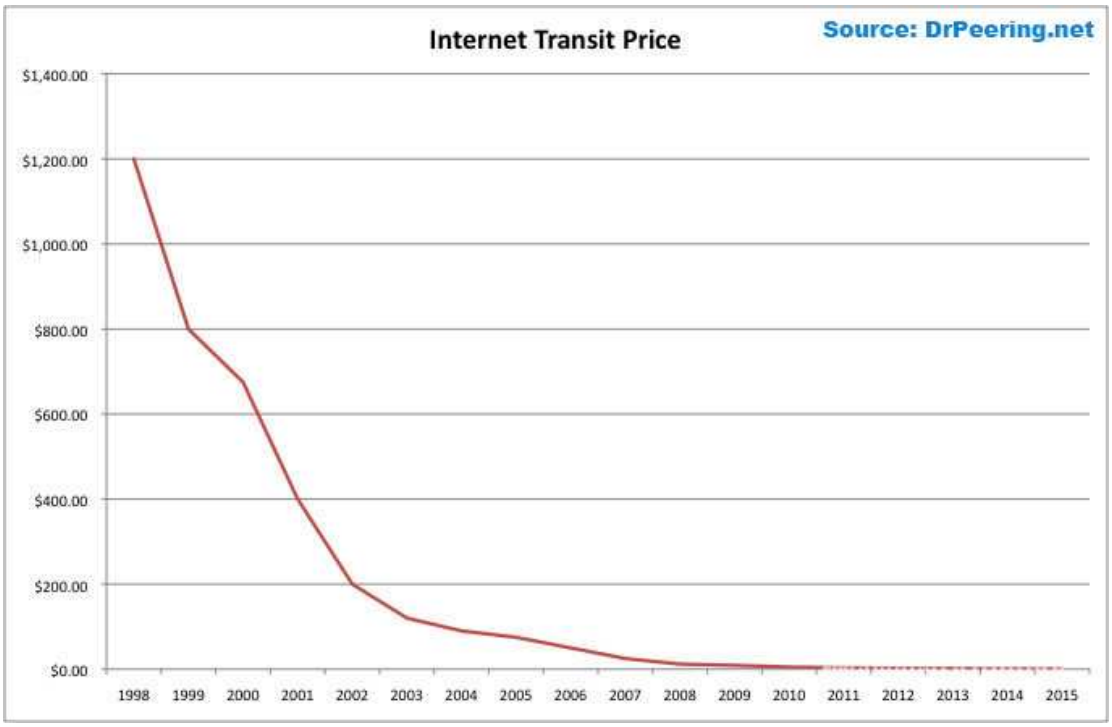
[14] *See*, *e.g.*, Telegeography, *Global Internet Geography* (Executive Summary), at 3 (2011), http://www.telegeography.com/page_attachments/products/website/research-services/global-internet-geography/0002/4221/telegeography-global-internet.pdf ("Between Q2 2005 and Q2 2011, median GigE port prices in New York and London declined at a compounded rate of approximately 20 percent, while prices in Hong Kong declined 16 percent. For the highest capacities in the most competitive markets, the lowest prices fell to $1 per Mbps per month."). *See also*, TeleGeography, *Global Internet Geography* (Executive Summary), (2012) ("With a few exceptions, price declines accelerated in the most recent year, relative to the three-year trend. In New York, the median GigE port price fell 50 percent from Q2 2011 to Q2 2012, compared with a 28 percent decline compounded annually from Q2 2009 to Q2 2012.")

[15] TeleGeography, *Global Internet Geography* (Executive Summary), (2012) (emphasis added).

[16] According to data from TeleGeography's IP Transit Pricing Service, price declines in most locations accelerated between Q2 2011 and Q2 2012, compared with the longer-term trend. The median monthly lease price for a full GigE port in London dropped 57% between Q2 2011 and Q2 2012 to USD3.13 per Mbps, compared with a 31% decline compounded annually from Q2 2007 to Q2 2012.

[17] Available at: http://www.analysysmason.com/About-Us/News/Insight/Insight_Internet_connection_Jun2011/

generated by Internet content have resulted in significant changes in interconnection arrangements to allow greater traffic volumes to be carried with lower latency and to reduce transit costs.[18]



***Expanding Choices*:** The development of Internet Exchange Points (IXPs) around the world has led to distributed interconnection arrangements between peers and transit customers and has also led transit customers to interconnect directly at those points. As a result, ISPs and content providers now have many options for avoiding Internet backbone transit costs, including secondary peering arrangements between ISPs and paid peering arrangements between ISPs and content providers. Additionally, content providers have constructed huge CDNs to deliver their content to cache servers closer to ISP networks and reduce transit costs. In turn, backbone providers have adapted by offering partial transit arrangements to ISPs. These expanding choices for delivering and exchanging traffic have reduced the demand for transit services and further increased competition between backbones

[18] *Id.* at 2-3. The chart reproduced here is from DrPeering, *supra* note 18.

on the price of transit to generate the traffic volumes required to continue their peering relationships.[19]

These developments have also resulted in substantial changes in global inter-regional and intra-regional Internet traffic flows, resulting in more efficient network usage, improved network performance and investment growth. The growth of IXPs around the world combined with market liberalization has had notable impacts on the market for Internet interconnectivity: a significant decline in Internet bandwidth connections from each region of the world to North America; the use of local exchange points replacing much of the prior need for international connectivity in Asia and Europe; and the increasing use of IXPs in emerging markets, including in Africa, where 20 countries had IXPs by 2010.[20]

All of these important changes with Internet traffic flows have occurred as the result of competitive market forces and without any regulatory intervention. Indeed, the unregulated nature of the Internet has greatly assisted these changes, as prescriptive regulation would likely have locked in place specific technologies and business models. To AT&T's knowledge, apart from the withdrawn Polish regulation described below, no country has regulated Internet interconnection arrangements (other than some temporary limits on changes in peering arrangements required in a merger proceeding) and there is no reason for regulatory intervention in these markets today. This is because the multiplicity of Internet interconnection relationships among thousands of market participants in this global "network of networks" allow any provider to reach all Internet destinations at low cost, and prevent Internet backbone operators from exercising market power.

No Basis For Ex Ante Regulation: For these reasons, the Commission found in 2010 that Internet interconnection markets in Poland do not qualify for *ex ante* regulation, and required UKE, the Polish regulator, to withdraw its proposed regulation of Internet interconnection arrangements provided by Telecomunikacja Polska (TP), the incumbent operator.[21] The Commission found IP peering and IP transit to be "functionally substitutable . . . at both [the] national and international level," rejected UKE's arguments that separate markets exist for these services, and found no evidence to support UKE's claim that TP has

[19] *Id*. at 3.

[20] *See* ICC Discussion Paper, Internet Backbone Agreements, Jul. 27, 2011. *See also*, Analysys Mason, *Overview of Recent Changes in the IP Interconnection Ecosystem*, May 2011; TeleGeography, *Global Internet Geography* (Executive Summary), (2012).

[21] *Commission Decision of 3 March, 2010 Pursuant to Article 7(4) of Directive 2002/21/EC (Withdrawal of Notified Draft Measures)*, Mar. 3, 2010.

significant market power over these arrangements. In dismissing UKE's arguments, the Commission noted that "[t]he large number of transit agreements signed by ISPs with national and international transit operators, the need to interconnect at only one of the public IXPs in Poland, and the resulting low entry barriers" indicated the existence of a competitive market.[22] In ruling that UKE must withdraw its proposed regulation, Commissioner Kroes noted that "our assessment is that regulation of these particular markets for Internet traffic exchange services is not necessary to protect consumers or competition. If the market itself is able to provide for fair competition, don't disturb it with unnecessary regulations."[23]

Similar competitive circumstances apply to Internet traffic arrangements in other EU Member States. EU Internet interconnection markets therefore cannot satisfy the "three criteria" test for *ex ante* regulation that Commission Recommendation 2007/879/EC requires – high and non-transitory entry barriers, the structure of the market must not tend towards effective competition, and the application of competition law alone must not be able to adequately address the market failure concerned.[24] Likewise, the U.S. Federal Communications Commission has repeatedly found that the Internet transit and peering marketplace is competitive and efficient, and that any given IP network has little incentive or ability to engage in anticompetitive conduct.[25]

No Interconnection Obligations Should Apply: BEREC has noted that "[Peering and transit interconnection] agreements have been largely outside the scope of activity of National Regulatory Authorities (NRAs). This appeared justified in particular due to the

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[22] Notably, the Commission also refused to find TP's lack of a peering policy as indicating the existence of significant market power. The Commission found that the growth of the Internet, the increased diversity of Autonomous Systems, and the growth of content-heavy ISPs and large content providers downloading large volumes of traffic "lead to traffic patterns that are highly asymmetric and impact how IP traffic exchange agreements are negotiated, i.e. whether a price is charged for the exchange of traffic or whether a (free) peering solution is acceptable to the parties." *Id.*, ¶ 52. Thus "it is in principle not unusual that smaller networks or content-heavy networks conclude transit (rather than peering) agreements with larger networks and agree to pay the larger providers to deliver their traffic." *Id.*

[23] *Telecoms: Commission rules against plans to regulate Internet traffic exchange services in Poland*, Commission Press Release IP/10/240, Mar. 5, 2010

[24] *See* Commission Recommendation of 17 December 2007 on Relevant Product and Service Markets, Art. 2, 2007/879/EC.

[25] *See* U.S. Federal Communications Commission, *Applications filed by Global Crossing Ltd and Level 3 Communications, Inc. for Consent to Transfer Control*, 26 FCC Rcd 14056, 14067-69 ¶¶ 25-29 (2011); U.S. Federal Communications Commission, *AT&T Inc. and BellSouth Corp. Application for Transfer of Control*, 22 FCC Rcd 5662, 5736-38 ¶¶ 144-49 (2007); U.S. Federal Communications Commission, *SBC Communications Inc. and AT&T Corp. Applications for Approval of Transfer of Control*, 20 FCC Rcd 18290, 18354-66 ¶¶ 116-39 (2005).

competitiveness of the transit market on IP backbones."[26] Similarly, BEREC's recent Consultation Paper questions whether "any specific form of interconnection obligations" may be applied to Internet interconnection arrangements under Article 5 of the Access Directive.[27] As described below, because the large number of indirect interconnection alternatives gives all networks strong incentives to reach efficient interconnection arrangements and thus ensures continued end-to-end connectivity, no regulation of these arrangements is necessary.

Indirect interconnection opens up a multiplicity of routes into any broadband ISP's network, giving all IP networks (including ISPs) strong incentives to reach efficient interconnection arrangements. Suppose, for example, that an IP network seeks a direct peering relationship with a broadband ISP in order to deliver its traffic to the ISP's customers. If the traffic between the two networks is grossly imbalanced, the ISP may try to condition any direct peering arrangement on the payment of compensation. But if it demands too high a price, the IP network can simply choose other alternatives for delivering its traffic to the ISP's customers. For example, it could reach end users by purchasing intermediate transit services from one of many third-party IP networks.[28] And that third-party IP network may in turn be either (1) a settlement-free peer of the ISP—in which case the ISP would receive no compensation for terminating the traffic—or (2) the ISP's *own* transit provider as well, in which case the ISP may end up *paying* to terminate the traffic.[29] Either way, the ISP may be worse off than if it had agreed to reasonable terms for direct peering. The availability of transit (indirect interconnection) as an alternative to paid peering (direct interconnection)

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[26] BEREC, *Response to the Commission Questionnaire on Net Neutrality* (BEREC(10)42.

[27] BEREC Consultation Paper at 46. *See also*, *Directive 2002/19/EC of the European Parliament and of the Council*, Mar. 7, 2002, Art. 5.

[28] *See* P. Faratin *et al.*, *Complexity of Internet Interconnections: Technology, Incentives and Implications for Policy*, at 8-11 (Sept. 2007), http://people.csail.mit.edu/wlehr/ Lehr-Papers_files/Clark%20Lehr%20Faratin%20Complexity%20Interconnection%20TPRC% 202007.pdf.

[29] *Faratin & Clark*, *supra* note 13, at 63 (explaining that if one network denies settlement-free peering privileges to others, those other networks, "if they can control the routing of their traffic," can "cause their traffic to/from the prospective peer to route over the peer's transit connection to raise the peer's transit costs in order to induce it to peer"); Rudolph van der Berg, *How the 'Net works: an introduction to peering and transit*, Ars Technica (Sept. 2, 2008), http://arstechnica.com/old/content/2008/09/peering-and-transit.ars ("Allegedly, a big American software company was refused peering by one of the incumbent telco networks in the north of Europe. The American firm reacted by finding the most expensive transit route for that telco and then routing its own traffic to Europe over that link. Within a couple of months, the European CFO was asking why the company was paying out so much for transit. Soon afterward, there was a peering arrangement between the two networks.").

will thus generally keep the price of paid peering below the price of transit.[30] This is a powerful competitive check: as discussed above, because the transit market is highly competitive, the price of transit has been falling rapidly for over ten years. Additionally, as BEREC recently noted, the growth of CDNs and peering arrangements between operators other than Tier 1 backbones, "more traffic is circumventing the networks of global backbone providers."[31]

The vertical integration of ISPs and transit providers also has no effect on competitive conditions in the transit market. If the eyeball ISP eliminated all transit links, to maintain the existing level of service quality to its eyeball customers, it would have no choice but to establish peering arrangements with all other Tier 1 providers. However, any operator seeking access to the eyeballs in question can just buy transit from one of the ISP's Tier 1 peers. The access would occur automatically, via the transit provider's peering link with the eyeball ISP.

If the eyeball ISP sought inefficient terms from those other Tier 1 providers, they could decline and two equilibrating factors would ensure. First, the eyeball ISP's customers may suffer diminished QoS – which could drive customers away from the eyeball ISP. Second, it is likely that a significant portion of traffic from any content provider not offered reasonable paid-peering or transit interconnection by the eyeball ISP would still arrive at the eyeball ISP, but via peering links that the eyeball ISP may maintain with other ISPs. Thus, the eyeball ISP would receive much of the traffic, but with no revenue. Both of these factors would incent the eyeball ISP to negotiate reasonable transit and paid peering arrangements.

These observations refute any claims that any purported "termination monopoly" could justify regulating Internet peering and transit. Any reliance on that concept is misplaced here because the "termination monopoly" concern originates from and is peculiar to the public switched telephone network and the mandatory nature of the charges for

[30] The option of peering also helps to maintain the competitiveness of the transit market. If transit prices increased above competitive levels, providers could respond by peering more extensively. Both markets are complimentary to one another because peering and transit have substantial interchangability in use. The more competitive is the transit market, the more reasonably and efficiently the peering market must operate to offer equally valued services. Similarly, the more reasonable and efficient the peering market, the more competitively transit must be offered to provide equally valued services.

[31] BEREC Consultation Paper at 31. *See also, id.* 38 (noting that "backbone providers are increasingly exposed to competitive pressure") & 41-42 (noting that a greater portion of traffic is no longer routed via global Tier 1 backbone providers and that there has been "a flattening of network hierarchies").

termination, which stem directly from regulation, not marketplace dynamics.[32] As an initial matter, the hierarchical, circuit-switched nature of the public switched telephone network often makes it less efficient than it is in an IP environment to route a call through multiple intermediate links en route to the called party, given that fixed circuits must be reserved on each intermediate link for the duration of any call, thereby "wasting" capacity during every split-second gap in a conversation. But in the distributed, packet-switched Internet, no circuits are held open at all; capacity on intermediate networks can thus be offered at far lower cost; and, as discussed, the abundance of indirect interconnection alternatives gives all IP networks strong incentives to reach efficient interconnection arrangements. There is, accordingly, no need to apply regulatory interconnection obligations to these arrangements to ensure continued end-to-end connectivity.

2. INTERNET TRAFFIC COMPENSATION REQUIREMENTS WOULD HARM USERS AND LIMIT CONNECTIVITY

Although Internet interconnection arrangements have not been limited by burdensome regulation thus far, some countries and operators seek to impose a "sending network pays" or similar traffic compensation model on Internet traffic arrangements in order to increase the build-out of network infrastructure, particularly in developing countries. Similar proposals have also been made recently by certain European operators. The proponents are requesting revisions to the ITU International Telecommunications Regulations that would require the adoption of this radically different approach. Although there may be appropriate circumstances where parties would mutually negotiate a sending network pays arrangement for particular traffic flows, it would be a radical and unprecedented change to intervene in the market by regulating this approach for all traffic. Rather than stimulate the further expansion of the Internet, such mandatory measures would likely suppress traffic flows and investment incentives, reduce connectivity, and require destination-specific pricing for consumer Internet usage that would radically change the current user Internet experience.[33] Countries requesting these subsidies to expand their Internet infrastructure should instead achieve this

[32] See supra note 3. Indeed, one of the greatest risks of regulatory intervention to IP interconnection arrangements is that a specific mandatory model of traffic compensation like sending network pays could create a regulated terminating monopoly, whereas no such market power exists in the current flexible commercial environment.

[33] *See generally*, Michael Kende, *Internet Global Growth: Lessons for the Future*, Analysys Mason, September 2012, available at: http://www.analysysmason.com/Research/Content/Reports/Internet-global-growth-lessons-for-the-future/

result by following the successful telecom liberalization and privatization policies recommended by the World Bank, UNCDAD and other expert observers.

Adverse effects: Internet economics is based primarily on the flat-rate charging of Internet users and determining any inter-operator charges based on the relative value received by the two interconnecting parties. Under a regulatorily-mandated "sending network pays" model, every intermediate network would need to charge their interconnecting network on a per-byte basis, and the likelihood that all 5,000 Internet operators that interconnect their networks to create today's Internet would agree to these new charges is very remote. Indeed, content and application providers and other "over the top" (OTT) providers that are not located in the country of termination and have no contractual relationship with the terminating carrier could simply refuse to pay, which could result in selective content blocking.

A further possible result, when terminating charges are passed all the way back to the origin, end user created content such as e-mails could be subjected to destination-specific pricing for consumer Internet usage, similar to consumer charges for international phone calls, and a radical change to the current Internet user experience.

The proposal would result in the creation of new and harmful incentives to avoid charges, or to collect excessive charges, by blocking content, diverting traffic flows and profiting from a fragmented Internet. As with the history of reciprocal compensation in the United States, once rates are set a by a regulator and some companies are required to pay a fixed rate to other companies, the paying companies will quickly find regulatory arbitrage opportunities and develop models to route traffic in inefficient but profitable ways. Internet network operators and ISPs also would likely devise other creative solutions to take advantage of regulations imposed in a jurisdiction, whether it is to place servers in jurisdictions that will give them a regulated benefit, or to send phantom traffic that reverses traffic flows in order to balance out net settlements.

Extensive regulation also would likely be necessary to impose this charging model that would, in turn, reduce the flexibility, innovation and rapid change that has been the hallmark of the Internet.[34] Because many parties would not commercially agree to a "sending network pays" model, regulation by each country would be required to enforce this new model. This could lead to regulation of carrier agreements, costs, and allocation of costs between end-users and OTT players. The result would be complete economic and technical

[34] *See also, e.g.*, BEREC Consultation Paper at 48 ("In the Internet ecosystem speed and flexibility to adapt interconnection arrangements outweigh formal codification of interconnection rules (99% of interconnection arrangements are concluded on a handshake basis.").

regulation of operator rates, terms, conditions, and quality of service, and a significant reduction in the dynamism and growth of the Internet.

Countries adopting "sending party pays" regulation are unlikely to benefit: The proposal also would result in inconsistent and disruptive implementation, including the blocking of content, or even the disconnection of entire Internet interconnection agreements from some countries. If some countries adopt "sending network pays" regulation, but other countries do not, then the last sending network will be stuck with a charge that they cannot recover. This may result in either traffic blocking when a carrier is not able to recover upstream (i.e., certainly raising free flow of information concerns), or it could result in disconnection of interconnection agreements (i.e., limiting Internet connectivity to countries that impose this model). Network operators may refuse to send traffic to locations where they are obliged to pay terminating data charges, but are unable to receive compensation for doing so. Even when OTT providers might be willing to pay terminating traffic to some markets, they may be unwilling to do so for less financially attractive areas, such developing countries. As a result, many countries that impose this mechanism would be cut off from large parts of the Internet.

Instead of disrupting the Internet marketplace in this way, the countries advocating such regulation should seek to make their Internet sectors more efficient and enhance their commercial flexibility, and thus reduce their per-unit Internet access costs, by adopting pro-competitive policies encouraging greater investment in local Internet infrastructure, increased local traffic volumes and more local caching of popular content. Claims that subsidization measures are necessary to expand Internet infrastructure and connectivity in developing countries fail to recognize that sector liberalization and competition are far more effective than subsidies in stimulating infrastructure investment and market growth in developing countries. The introduction of market competition in developing countries causes providers in those countries to price services more attractively leading to greater subscription and use, greater investment and more extensive infrastructure development.[35] Reports by the OECD, the World Bank, UNCTAD and other expert bodies find that since the mid-1990's,

[35] The OECD notes that prior to 1994, when developing countries received huge subsidies via settlements payments for international voice traffic, "there was a high reliance on providing access, and highly profitable international services, to small percentage of urban elites but few incentives to expand service to rural areas or even to those users who could afford service (long waiting lists were common at the time even in many OECD countries)." OECD, *Global Opportunities for Internet Access Developments*, Feb. 4, 2008, at 14.

competition, privatization and new technology has stimulated rapid telecom market growth in countries at all levels of economic development.[36]

Similar concerns are raised by the Internet Society, which warns of "higher costs for end-users, selections by content and transit providers about where to send information which could impact information flows, additional incentives to misroute traffic for fraudulent purposes, fewer interconnection opportunities for developing countries, and fragmentation of the Internet."[37] The Internet Society further states:

> "Internet traffic is fundamentally different in character to circuit-switched telephony traffic and attempting to retrofit the accounting regime from the telephony world to the Internet is, in our view, inconsistent with the nature of the Internet's interconnectivity and the efficiencies that are inherent in the existing commercial arrangements. Thus, we find no merit in the proposals to incorporate a sending-party network pays settlement regime into the text of the ITRs."[38]

For the above reasons, regulators in Europe and elsewhere should reject efforts to impose these misguided regulatory models on Internet interconnection arrangements, whether through the revision of the ITU's International Telecommunications Regulations, or through national regulation.

3. INTERNET TRAFFIC DATA REPORTING IS UNNECESSARY AND POTENTIALLY HARMFUL

Regulators also should avoid other unnecessary intervention in Internet traffic markets, such as through requirements for the reporting of information concerning IP peering or transit arrangements. BEREC has recently noted that "most [regulators] do not consider [data gathering exercises] appropriate unless concrete problems or requests occur," and that "[a]ny measure could be potentially harmful, so that it should be carefully considered."[39]

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[36] *See, e.g., id*; World Bank, *Building Broadband, Strategies and Policies for the Developing World (2010);* World Bank, *Africa's ICT Infrastructure, Building on the Mobile Revolution* (2011); World Bank, *Information and Communications for Development 2006: Global Trends and Policies;* World Bank, *Financing Information and Communication Infrastructure in the Developing World*, Working Paper No. 65 (2005), at xiii; United Nations Conference on Trade and Development, *Information Economy Report 2011;* United Nations Conference on Trade and Development, *Information Economy Report 2006, The Development Perspective*, Nov. 2006.

[37] Internet Society, *Internet Interconnections*, www.internetsociety.org, at 2.

[38] *Id*. at 8.

[39] BEREC Consultation Paper at 50.

AT&T shares these concerns that any regulatory intervention, however light-handed, may have unintended adverse consequences.

For example, in the absence of any market failure or other systemic problem in Internet interconnection markets requiring such detailed regulatory oversight, there is no reason for any regulator to require the reporting of information concerning IP peering or transit arrangements. Ample information may be obtained to monitor the Internet interconnection marketplace and deepen a regulator's understanding of Internet traffic arrangements by using publicly available data and reports and commissioning studies from knowledgeable consulting groups and other third party observers, rather than by requiring the reporting of data concerning these arrangements. The mere possibility of a future dispute occurring also does not justify imposing a requirement to file information, as any data gathering required for this purpose may be conducted in a more efficient, timely and less burdensome manner in response to specific disputes. Data reporting requirements impose unnecessary costs on Internet providers, and even apparently innocuous measures may encourage more onerous regulation of Internet interconnection arrangements. Regulators therefore should avoid establishing such potential harmful precedents.

Because of such concerns, AT&T has joined Verizon in requesting the annulment of a new regulation that requires operators to provide the French regulatory authority ARCEP with detailed semi-annual reports on their wholesale Internet traffic practices.[40] ARCEP has justified its new regulation as warranted by a general desire to learn more about the market. However, as noted above, regulators may utilize less burdensome methods of market analysis than to issue ongoing regulatory requirements for data reporting obligations. In view of the absence of evidence of market failure in the highly competitive Internet services market, and because regulatory restraint continues to foster a highly successful Internet model across Europe, such reporting requirements are unnecessary. AT&T hopes that regulators instead will follow a cautious approach to such measures.

AT&T would be pleased to answer any questions concerning these comments.

Respectfully submitted,

[40] ARCEP n°2012-0366 decision related to the implementation of a process for gathering information on the technical and pricing terms governing data conveyance and interconnection

Karim Antonio Lesina
Vice President- EU, Caribbean & Latin America, Transatlantic Relations
International External Affairs
AT&T