Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20544

In the Matter of tw telecom inc. Petition for Declaratory Ruling Regarding Direct IP-to-IP Interconnection Pursuant to Section 251(c)(2) of the Communications Act, As Amended, For The Transmission And Routing Of tw telecom's Facilities-Based VoIP Services And IP-In-The-Middle Voice Services	WC Docket No. 11-119

REPLY COMMENTS OF VERIZON AND VERIZON WIRELESS

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As many commenters agree, the Commission should continue its hands-off regulatory approach and allow commercial agreements to govern IP-to-IP interconnection, as they do on the Internet itself in the absence of *any* regulation. Industry participants — both CLECs and ILECs — are currently working through the issues to develop industry standards for direct IP interconnection. The ruling tw telecom inc. ("TWTC") seeks through its Petition for Declaratory Ruling ("Petition") would interfere with those market-led efforts, hamper the efficient development of IP interconnection, and divert funds that could otherwise be spent on broadband deployment. There is no need for the Commission to circumvent the industry-led process. TWTC's petition is a solution in search of a problem.

I. THE COMMISSION SHOULD RELY ON MARKET-LED SOLUTIONS, NOT REGULATORY MANDATES, TO YIELD IP-TO-IP INTERCONNECTION ARRANGEMENTS

Companies today successfully exchange IP-originated and IP-terminated voice traffic through existing PSTN interconnection arrangements (in TDM format), with the provider of the VoIP service responsible for any necessary conversions to or from IP format. Furthermore, the Commission has made clear that carriers must accept IP-originated traffic through those

arrangements.[1] Under these circumstances, VoIP has flourished. The conversion that is required to interconnect a VoIP network to a TDM-based voice network has not hampered or discouraged the development of VoIP and IP-enabled services. To the contrary, as AT&T explains, without the regulatory mandate that TWTC seeks, interconnected VoIP subscriptions totaled 29 million in June 2010, representing a 21% increase, while traditional switched access lines declined by 8% over the same period.[2]

Carriers are actively participating in the transition to IP-to-IP interconnection. Many interexchange carriers today directly exchange traffic with one another in IP format, and they offer commercial products that accept IP-originated traffic in IP format.[3] These interconnection arrangements and products have evolved not because of regulatory requirements, but because they make sound market sense. Much like the Internet, which is the most famous example of market-based IP interconnection, the IP-interconnected products and services for interexchange voice traffic available today developed without regulatory intervention.

The same market forces will drive the evolution towards direct IP interconnection for termination of voice traffic. As the number of IP voice end points in a carrier's network grows

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[1] *Time Warner Cable Request for Declaratory Ruling that Competitive Local Exchange Carriers May Obtain Interconnection Under Section 251 of the Communications Act of 1934, as Amended, to Provide Wholesale Telecommunications Services to VoIP Providers*, Memorandum Opinion and Order, 22 FCC Rcd 3513 (2007).

[2] AT&T Opposition at 10, citing *Local Telephone Competition: Status as of June 30, 2010*, Industry Analysis and Technology Division, Wireline Competition Bureau, http://www.fcc.gov/Daily_Releases/Daily_Business/2011/db0321/DOC-305297A1.pdf, at 5-6 (March 21, 2011).

[3] *See, e.g.*, AT&T Voice Over IP Connect Service (AVOICS), http://www.business.att.com/content/productbrochures/AVOICS_1169.pdf; Global Crossing Global Crossing Carrier VoIP Services, http://www.globalcrossing.com/carrier/carrier_voip.aspx; Verizon's Session Initiation Protocol Gateway Service, http://www22.verizon.com/wholesale/solutions/solution/sip%2Bgateway%2Bservice.html.

and the demand for services possible only when the voice path remains IP end-to-end increases, carriers will naturally seek interconnection arrangements that allow them to terminate incoming calls to their IP-capable end points in VoIP format most efficiently. But much more work needs to be done to address the myriad technical and operational issues that would enable IP-based interconnection on an industry-wide basis.

As an initial matter, it is important to emphasize that the existing PSTN remains overwhelmingly based on TDM technology and architecture. While various providers have begun the transition to IP technology and services, that transition remains in its early stages. As a result, the PSTN will continue to employ TDM technologies for some period of years to come, and massive investments would have to be made to replace those existing technologies completely with new IP technologies and facilities. Any interconnection arrangements obviously have to account for this fact. At the same time, the VoIP architecture is very different from the legacy TDM network architecture. Whereas in the TDM network, the provider delivering the call to the terminating carrier must carry the traffic all the way to the call recipient's local calling area, and must either build the facilities to carry the traffic or lease them from another provider, for VoIP there can be far fewer points of interconnection, at which carriers can efficiently aggregate traffic for delivery. As a result, it may not make sense to replicate the local-delivery model that prevails in the TDM world, nor would it make sense to require existing network providers to incur large expenditures on creating the new locally-based IP interconnection facilities that would be needed solely to replicate a local-delivery model. To be sure, this efficiency is one of the benefits of IP interconnection, and it is one of many reasons why the market will evolve there on its own. But these various complications serve to emphasize why the Commission should resist the urge to dictate a regulatory solution. A government mandate

could impose standards that do not fully take advantage of the more advanced technology and network configuration, inadvertently resulting in more costly interconnections that impose unnecessary costs on consumers. And displacing the industry-led efforts with regulatory mandates — particularly mandates implemented through the state-by-state, agreement-by-agreement process under § 252 — would result in wasteful expenditure of limited capital.

In the same vein, there is no consensus on a wide range of standards interoperability and feature issues that need to be addressed before IP-to-IP interconnection can be as simple and automatic as today's TDM-based interconnection. The technical standards underlying TDM-based interconnection were worked out over decades leading up to divestiture and later, the 1996 Act. In the IP world, however, that work is ongoing. As Verizon and others commented, the Alliance for Telecommunications Industry Solutions (ATIS) is developing industry standards for exchanging traffic in IP format through the Next Generation Carrier Interconnection (NG-CI) Task Force.[4] ATIS is developing standards for the appropriate information for providers to exchange, protocol suites to configure network-to-network IP interconnection, and test cases for IP interconnection configuration testing.[5] But those standards are not yet in place. In addition,

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[4] *See* ATIS, Packet Technology and Systems Committee, http://www.atis.org/0191/issues.asp (follow "Subcommittees and Task Forces" to "PTSC NG-CI").

[5] Examples of technical issues that the standards process is addressing range from items as basic as whether IPv4 will be supported (or will all carriers be required to simply use IPv6 technology); which transport layer protocol should be used (UDP, TCP, or TLS) and whether/how to discover this; and which codec – software programs capable of encoding or decoding an analog signal into a digital data stream, or doing both – to support (the leading wireline codec that is usually proposed, G.711, does not appear to be as "spectrum friendly" as others in widespread use in wireless networks today, while some of the highly-compressed codecs used for wireless networks present unnecessary costs when implemented for wireline traffic). Other issues exist within the SIP protocol itself, relating to various features that may or may not be supported across different existing VoIP networks today, such as generation of ring tones, call waiting, transcoding, or emergency telecommunications services. Finally, operational issues, such as OSS issues, long ago worked out for the PSTN by initiatives like ATIS' Ordering

Telcordia and leading carriers are working to develop the necessarily mechanisms thorough which carriers can publish their list of IP-capable end points and the point of interconnection to which calls destined to those end points should be delivered. The various technical issues are best addressed through industry efforts as part of a naturally occurring transition to IP interconnection.

While that transition progresses, traffic that is originated or terminated in IP by VoIP providers can and will continue to be exchanged with the PSTN in the same way it is successfully being exchanged today: over existing interconnection arrangements in TDM format. And although, thanks to those existing arrangements, interconnected VoIP services have grown at an incredible rate,[6] the majority of traffic exchanged over those arrangements continues to be circuit-switched traffic that is originated or terminated, or both, in TDM format. Traffic between VoIP customers and TDM customers must be converted to TDM at some point in order to complete the call.[7] Currently, the VoIP provider is responsible for performing that conversion, and may do so itself or by contracting with one of the many companies in the marketplace offering IP-to-TDM conversion services.[8] This conversion is necessary regardless of whether the interconnected VoIP provider is an ILEC, a CLEC, a cable company, a wireless broadband provider, or a company like Vonage, Skype, or Google. TWTC's proposal is nothing more than an attempt to tilt that level playing field: shifting the cost of all of those format

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and Billing Forum, remain to be addressed in the VoIP context to ensure that the exchange of traffic in IP format can support the myriad existing operational processes: end-user billing, third-party billing, intercarrier compensation, and other such issues. The industry is making good progress, but it is far too premature—and an unwise rush-to-judgment—to dictate an outcome through the regulatory process.

[6] *See* AT&T Opposition at 10; Comments of Verizon and Verizon Wireless, *Connect America Fund et al*., WC Docket No. 10-90 *et al*., at 7-8 (Apr. 1, 2011).

[7] *See* United States Telecom Association ("USTelecom") Comments at 4.

[8] *See* AT&T Opposition at 11.

conversions and other network architecture changes onto ILECs, creating artificial advantages for non-ILEC VoIP services, distorting the marketplace, and diverting resources from broadband deployment.

Other commenters agree that the Commission should "take a largely hands-off approach" and should not "engage in heavy-handed regulation or utilize legacy-type rules" for IP-to-IP interconnection.[9] Alcatel-Lucent explains that the "exchange of IP-communications — whether voice, video, or data — has prospered for years without government intervention, and it would disserve the public interest for the Commission to subject IP-enabled services to the heavy-handed regulatory regime espoused by TWTC."[10] As the D.C. Circuit has recognized, companies like Alcatel-Lucent that sell "goods and services that are inputs to the production and use of information services," such as the VoIP services at issue here, have "the incentive to make a completely unbiased judgment" on the merits of regulatory proposals, such as those TWTC advocates.[11] Also opposed to the TWTC Petition is the Voice on the Net (VON) Coalition, which includes providers of interconnected VoIP services that ostensibly would benefit from TWTC's proposal to mandate IP-to-IP interconnection. The VON Coalition supports "negotiated commercial arrangements rather than regulatory fiat [to] provide the framework for the future exchange of IP communications."[12] Small and large ILECs alike explain that current networks today are not capable of complying with an IP-to-IP interconnection regulatory

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[9] Google Comments at 6.

[10] Alcatel-Lucent Comments at 6.

[11] *United States v. Western Elec. Co.*, 993 F.2d 1572, 1582 (D.C. Cir. 1993) (emphasis omitted).

[12] VON Coalition Opposition at 7.

mandate, and that this capability should be allowed to develop in accordance with marketplace demand and industry-developed standards.[13]

II. THE ACT DOES NOT REQUIRE INTERCONNECTION IN A SPECIFIC FORMAT OR TECHNOLOGY

The commenters supporting TWTC's Petition — like TWTC itself — identify no legal authority supporting their view that § 251(c)(2) gives CLECs the right to dictate the format in which traffic travels over an interconnection arrangement. Indeed, it has long been established that § 251(c)(2) only provides a right to interconnect with ILECs' existing networks — not a superior quality, unbuilt network. And as the Commission recently noted, "interconnection for circuit-switched voice traffic is governed by section 251," while "there historically have not been Commission rules governing IP interconnection."[14]

Some commenters, recognizing the legal flaws in the TWTC Petition, claim that the Commission should rely on different provisions of the Communications Act to mandate interconnected carriers to accept traffic in IP format. These commenters urge the Commission to ground such an obligation in § 251(a) or § 201(a).[15] Those claims are equally flawed, as they depend on a misreading of the statute and a misunderstanding of VoIP services, which are information services, not telecommunications services, telephone exchange service, or exchange access.

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[13] *See* Moultrie Independent Telephone Comments at 2, USTelecom Comments at 3-4, 6-7; AT&T Opposition at 9-12.

[14] *Connect America Fund et al.*, Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking, 26 FCC Rcd 4554, ¶ 679 (2011).

[15] *See* Michigan Internet and Telecommunications Alliance Comments at 2-3, O1 Communications and Vaya Telecom Comments at 5-6.

Section 251(a), like § 251(c)(2), applies only to telecommunications carriers,[16] and VoIP providers are information service providers, not telecommunications carriers. Moreover, § 251(a) imposes a *duty* on every telecommunications carrier — "to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers"[17] — but does not mandate how that interconnection is accomplished. That is, § 251(a) does not give a carrier the right to insist that another carrier interconnect in a particular way or at a specific location; so long as a carrier is interconnected in some way with other carriers, that carrier has met its duty under this section. Nor has the Commission ever sought to dictate the manner in which a carrier satisfies its duty under § 251(a); instead, each telecommunications carrier is "permitted" to satisfy its obligation to interconnect directly or indirectly with other carriers "based upon [its] most efficient technical and economic choice[ ]," including "indirect connection."[18] Therefore, § 251(a) does not grant a carrier the right to insist that other carriers accept its traffic any particular format, including IP format. Carriers, however, can reach voluntarily negotiated agreements to exchange traffic in IP format, thereby satisfying their duty under § 251(a).

Section 201(a) grants the Commission the authority, "after opportunity for hearing" to require a "common carrier" to "establish physical connections with other carriers," if the Commission "finds such action necessary or desirable in the public interest."[19] But § 201(a) —

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[16] *See* 47 U.S.C. § 251(a)(1).

[17] *Id.*

[18] *Implementation of the Local Competition Provisions in the Telecommunications Act*; *Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, First Report and Order, 11 FCC Rcd 15499, ¶ 997 (1996); *see also Total Telecommunications Servs., Inc. v. AT&T Corp.*, Memorandum Opinion and Order, 16 FCC Rcd 5726, ¶ 27 (2001) (holding that "[s]ection 251(a) only requires AT&T to provide direct or indirect physical links between itself and [other telecommunications carriers]"), *petition for review denied in relevant part, AT&T Corp. v. FCC*, 317 F.3d 227 (D.C. Cir. 2003).

[19] 47 U.S.C. § 201(a).

no different from § 251(a) and § 251(c)(2) — applies only to telecommunications carriers.[20] And, again, VoIP providers are information service providers, not telecommunications carriers. Accordingly, the Commission could not rely on § 201 without classifying VoIP services as common carrier services; that is, as telecommunications services. Moreover, § 201 authorizes the Commission to require a carrier to "establish physical connections" with another carrier; it says nothing about dictating the format of the traffic routed over those physical connections.

CONCLUSION

The Commission should deny the TWTC Petition.

Respectfully submitted,

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[20] *See, e.g.*, *Virgin Islands Tel. Co. v. FCC*, 198 F.3d 921, 926-27 (D.C. Cir. 1999) (upholding Commission's determination that telecommunications carrier and common carrier have the same meaning in the Act).