

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matters of)
)
AT&T and National Telecommunications) GN Docket No. 12-353
Cooperative Association Petitions Concerning the)
TDM-to-IP Transition)
)

REPLY COMMENTS OF T-MOBILE USA, INC.

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T-Mobile USA, Inc. (“T-Mobile”) submits these reply comments in response to the petitions filed by AT&T and the National Telecommunications Cooperative Association (“NTCA”) requesting that the Commission address the transition of the public switched telephone network (“PSTN”) from time-division multiplexed (“TDM”) facilities and services to facilities and offerings based on the Internet Protocol (“IP”).¹

I. INTRODUCTION AND SUMMARY

Commenters agree that an orderly industry transition to IP networks holds the potential for enormous benefits, including greater efficiencies for carriers and new and better competitive services for consumers at lower prices. Commenters point out that a significant advantage of IP networks is more efficient network architecture with fewer points of interconnection (“POIs”) and greater reliability. These benefits will be undermined, however, if incumbent local exchange carriers (“ILECs”) are allowed to continue to insist that other providers interconnect with them at a large number of points that effectively would replicate the tandem/end-office-based design of traditional TDM circuit-switched networks.

¹ *Pleading Cycle Established on AT&T and NTCA Petitions*, Public Notice, 27 FCC Rcd 15766 (WCB 2012).

To ensure that the transition to an IP infrastructure results in a more robust and efficient IP network in a competitively neutral environment, the Commission should establish a set of regional POIs for IP interconnection, ideally located at Internet exchange points (“IXPs”) where multiple carriers are already exchanging data traffic. These POIs would act as defaults in the event carriers are unable to negotiate mutually agreeable, neutral IP interconnection points.

Similarly, the success of the IP transition depends on carriers’ ability to interconnect with one another in IP format on reasonable terms and conditions. The record demonstrates that many carriers are reaching IP interconnection agreements for the exchange of managed voice traffic with one another on reasonable terms; the exception is the largest ILECs – the carriers controlling legacy transport facilities and interconnection points – who argue for an unregulated environment. Contrary to their claims, the IP networks over which carriers are exchanging voice traffic in IP format are not the public Internet, and the Commission’s interconnection authority is unchanged by the network transition.

A trial or test-bed may be a useful vehicle to test regulatory provisions that will be helpful to the IP transition if it is competitively neutral. For example, a trial to test a set of default IP interconnection POIs, clear IP interconnection rights, and the obligation for each carrier to deliver traffic to and from the regional POI (at its own expense) would be useful. By contrast, the record demonstrates that it makes no sense to conduct a trial related to interconnection aspects of the IP transition based on ILEC “wire centers,” as AT&T proposes, given that wire centers are inefficient vestiges of TDM architecture. The record also shows that there would be no benefit to testing the deregulatory environment that AT&T suggests, given that there is clear evidence that the IP transition would suffer in the absence of clear IP interconnection requirements.

II. THE RECORD DEMONSTRATES THAT FACILITATING IP INTERCONNECTION IS CENTRAL TO A SUCCESSFUL IP TRANSITION

A. The Record Supports a More Rational Interconnection Architecture in the IP World

The initial comments show that one of the principal benefits of the IP transition will be the deployment of more efficient and reliable IP network architecture with fewer POIs and greater ability to re-route traffic to avoid outages.² As MetroPCS observes, “IP networks represent a major step forward in communications, making calls less susceptible to disruption and congestion, which benefits both individual consumers and public safety users alike. IP networks are self-healing and redundant, and, if an IP route is blocked or unavailable, the network can devise an alternate route on a dynamic basis.”³

The conversion to packet-switched IP technology offers the potential for far fewer POIs covering larger areas.⁴ As Cox points out, “IP-based interconnection, when fully implemented, will involve a much smaller number of points of interconnection that are unrelated to wire centers or any other element of current PSTN geography.”⁵ A more efficient POI structure would allow networks to benefit from the resiliency and redundancy benefits inherent in IP architecture, eliminating the single points of failure that characterize legacy hub-and-spoke TDM networks.⁶

The inherent efficiencies of a packet-switched IP network can be realized only if all carriers interconnect to exchange voice traffic in IP format at a few regional IP POIs. Reducing the number of POIs from thousands to a relatively few and requiring every carrier to be responsible for the cost of transporting traffic to and from regional POIs would be consistent with the bill-and-keep

² See, e.g., Cox Comments at 11; MetroPCS Comments at 4; Sprint Nextel Comments at 22-24, 29-31.

³ MetroPCS Comments at 4.

⁴ See, e.g., Cox Comments at 11; Sprint Nextel Comments at 22-24, 29-31.

⁵ Cox Comments at 11.

⁶ See, e.g., MetroPCS Comments at 4.

intercarrier compensation regime envisioned by the Commission in the *Transformation Order* and achieve AT&T's stated goal of "wean[ing] [carriers] . . . from their antiquated reliance on 20th-century ILEC networks."⁷ Industry and consumers will not reap the full benefits of the IP transition as long as competitive carriers are required to deliver IP traffic to the enormous number of POIs used in the TDM network based on legacy ILEC TDM switching locations. Because large ILECs control the current POIs, however, this opportunity to increase productivity and reliability cannot be realized without Commission action.

Therefore, the most significant step the Commission can take to facilitate the transition to IP networks is to establish default IP interconnection points to facilitate an efficient IP interconnection framework and require all carriers to transport traffic to and from that regional POI at their own expense.⁸ ILECs have a significant cost advantage under the existing interconnection rules requiring other carriers to deliver traffic deep into an ILEC's local networks and exchange traffic with the ILEC at an enormous number of points in the ILEC network.⁹ At minimum, this typically involves interconnection at thousands of legacy ILEC tandems and often even the tens of thousands of ILEC end offices. These tens of thousands of connections extract an implicit subsidy out of competitive carriers payable directly to the large ILECs by compelling competitors to pay the cost of building deep into the ILEC network.

Ensuring the development of an efficient IP network architecture will not require burdensome regulatory mandates. Providers should be permitted to negotiate reasonable IP locations to exchange IP voice traffic. And, to ensure that ILECs or other carriers with market power do not abuse their

⁷ AT&T comments at 6.

⁸ Note that these would be default, not required, interconnection points. If carriers jointly agree that different interconnection points are preferable, they would be free to agree to those.

⁹ This interconnection architecture is partially a remnant of the LATA-based requirements that once governed long-distance traffic as a result of the Modification of Final Judgment. Those requirements have long ceased to have any legal relevance.

position to enforce inefficient arrangements that benefit them, the Commission should specify a set of default interconnection points that would apply in instances where carriers cannot agree.

T-Mobile proposes that the Commission select the existing IXPs as default IP POIs unless carriers agree to alternative locations.¹⁰ Data traffic is already exchanged at those points, either directly or indirectly, and carriers, therefore, already bear the cost of transport to these points. Adding voice traffic to such transport circuits and POI exchanges would pose an insignificant incremental burden, given the relative volumes of Internet and VoIP traffic. Therefore, use of these default POIs should not impose any significant costs on providers of voice services.¹¹

IP networks hold the potential for significant benefits over legacy TDM technology, but only if the Commission ensures that the architecture of the IP networks used for voice traffic does not mimic the inefficiencies of the legacy TDM network and does not permit ILECs to leverage their existing interconnection points into an unfair anticompetitive advantage in the IP-enabled world.

B. The Record Supports Continued Commission Oversight of Interconnection Arrangements

1. The Record Overwhelmingly Demonstrates a Continuing Need for Commission Oversight of Interconnections During and After the IP Transition

An overwhelming majority of parties, including all commenters representing the wireless industry, CLECs, state utilities regulators, public interest groups, and large users of IP services, as well as most cable commenters, agree that the IP transition will be hindered unless all providers of IP services are able to interconnect with one another on reasonable terms and that Commission oversight is necessary to ensure this.¹² As Sprint, Cbeyond *et al.* and other carriers point out,

¹⁰ See, e.g., Sprint Nextel Comments at 4, 6.

¹¹ The Commission possesses ample authority to regulate IP interconnection. See *infra* Section I.B.

¹² See, e.g., XO Comments at 4-16, 21-30; Sprint Nextel Comments at 12-21; 27-32; Cbeyond *et al.* Comments at 6-16; Bandwidth.com Comments at 4-11; NCTA Comments at 1, 6-7, 10-12; NASUCA Comments at 31; Pa. PUC Comments at 3; AARP Comments at 12-14;

AT&T and other ILECs continue to exploit their legacy market power and network infrastructure by refusing to interconnect in IP and insisting on TDM interconnections, even where they or their affiliates have deployed IP voice interconnection facilities.¹³ Sprint’s comments provide a vivid illustration of AT&T’s own refusal to agree to IP interconnection. In a pending Illinois Commerce Commission arbitration proceeding involving Sprint’s request to interconnect in IP format with AT&T’s ILEC affiliate in Illinois, AT&T contends that its ILEC affiliate is unable and has no duty to interconnect with other carriers for the exchange of IP traffic because it is a TDM carrier – even though the ILEC affiliate delivers voice traffic to its IP affiliate in IP format.¹⁴ Similarly, in this proceeding, CenturyLink argues that IP interconnection regulation is unnecessary because providers always have the option to “convert their traffic to TDM and use existing interconnection arrangements.”¹⁵ And Verizon argues against the recognition of any obligation to interconnect in IP.¹⁶ In T-Mobile’s experience, the only carriers that routinely object to establishing IP-to-IP interconnection on reasonable terms are the very large ILECs with considerable control over the current network architecture – again, the same carriers that advocate here for an unregulated environment.

NECA/OPASTCO Comments at 7-8; Cablevision Comments at 4-7; Comptel Comments at 7-11, 19; Free Press Comments at 11-13; Joint Board State Members Comments at 9-11.

¹³ See, e.g., Sprint Nextel Comments at 14-15; Cbeyond *et al.* Comments at 13.

¹⁴ Sprint Nextel Comments at 14-15 (citing Direct Testimony of Carl C. Albright, Jr. on behalf of AT&T Illinois, *Sprintcom, Inc. et al. Petition for Arbitration*, Docket No. 12-0550 (Ill. Comm. Comm’n Dec. 5, 2012) and Direct Testimony of Dr. James Zolnierek on behalf of Ill. Comm. Comm’n Policy Division, *Sprintcom, Inc. et al. Petition for Arbitration*, Docket No. 12-0550 (Ill. Comm. Comm’n Jan. 15, 2013) (“Zolnierek Testimony”). As an Illinois Commerce Commission staff witness points out, the fact that the AT&T ILEC can deliver IP traffic from its own VoIP customers to its IP affiliate shows that it is perfectly capable of interconnecting in IP. See Zolnierek Testimony at 20-21.

¹⁵ CenturyLink Comments at 8-9.

¹⁶ Verizon Comments at 38-40.

By refusing to interconnect in IP, large ILECs undermine the benefits of IP networks by imposing unnecessary protocol conversion and other costs on competitors and the efficiencies and greater reliability inherent in IP networks. The record demonstrates that the current regulatory structure is impeding the IP transition by allowing ILECs to force other providers to continue to exchange traffic in TDM format – even where both providers will carry and deliver the traffic in IP format. As Inteliquent points out, providers do so because clear ground rules exist regarding interconnection rights and compensation requirements for legacy networks but not for IP networks.¹⁷ Accordingly, parties must be required to negotiate in good faith towards IP interconnection arrangements in order for the IP transition to fulfill its promise.

Sprint’s description of the Illinois proceeding also reveals a common ILEC strategy to avoid IP interconnection – the use of an unregulated IP affiliate. The interconnection rules governing the IP transition must specifically address this practice.¹⁸ In this regard, a simple non-discrimination requirement likely will be inadequate because ILECs can readily establish unreasonably high compensation levels between themselves and their IP affiliates, given that the “payments” are just transfers within the same holding company with no bottom-line impact. For this reason, the rules must protect against any providers’ ability to hide behind an affiliate to deny IP interconnection or attempt to impose unreasonable IP interconnection rates or terms.

Providers’ ability to connect with other providers in IP format on reasonable terms will be crucial to fulfilling the promise of the IP transition, and the Commission should guarantee it in this proceeding.

¹⁷ Inteliquent Comments at 2. *See also* Cbeyond *et al.* Comments at 8.

¹⁸ ILECs may not avoid Section 251(c) obligations by providing advanced telecommunications services through separate affiliates. *See Ass’n of Communs. Enters. v. FCC*, 235 F.3d 662 (D.C. Cir. 2001), *amended on other grounds*, 2001 U.S. App. LEXIS 1499 (D. C. Cir. 2001). The same rule should apply to IP voice services, irrespective of their ultimate classification.

2. The Commission Has Authority to Oversee IP Interconnections

The Commission possesses sufficient authority to oversee intercarrier interconnections for the exchange of IP voice traffic. As the Commission has held, the interconnection obligations in Sections 201 and 251 of the Communications Act, including the specific ILEC obligations in Section 251(c)(2), apply irrespective of the technology used.¹⁹ The Commission's "interconnection requirements are technology neutral."²⁰ Thus, as a number of parties have pointed out, a change in the technology used to deliver real-time voice traffic cannot make Section 251 or any other interconnection obligations inapplicable.²¹

Interconnection rights remain a necessary prerequisite to competition because ubiquitous ILEC networks are still the only way to interconnect with many RLEC networks and to secure necessary transit, transport, and special access services, as well as access to all of the ILECs' legacy POIs and subscribers.²² In light of these types of continuing ILEC market power, arguments based on their loss of customers and retail market shares miss the point. More likely, ILECs will have an even greater incentive to engage in anticompetitive conduct with respect to interconnection during and after the IP transition. These considerations will continue to require the application of interconnection requirements to the evolving network.

The ultimate regulatory classification of VoIP is irrelevant to the Commission's authority over IP interconnection for voice traffic. The Commission has held that Section 251(a) imposes a duty on every carrier to interconnect, irrespective of the ultimate classification of the traffic

¹⁹ See T-Mobile Comments at 13-17.

²⁰ *Connect America Fund*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 18126 ¶ 1342 (2011) (subsequent history omitted).

²¹ NARUC Comments at 16; NECA/OPASTCO Comments at 7-8; Sprint Nextel Comments at 14-15.

²² See NASUCA Comments at 13-14 (ILEC control over transport facilities); Sprint Nextel Comments at 12-16; XO Comments at 25-30; NCTA Comments at 6-7; Cbeyond *et al.* Comments at 9.

exchanged thereby, even where IP traffic is the only traffic being exchanged.²³ As the Commission has explained, “carriers that offer basic interstate telecommunications functionality to” information service providers are still telecommunications carriers “covered by the relevant provisions of section 251 . . . of the Act.”²⁴ AT&T and other ILECs thus are wrong to argue that the Commission has no authority to regulate IP interconnections between carriers.²⁵

As several commenters correctly observe, the IP networks being deployed for IP voice traffic are not the public Internet.²⁶ The “best efforts” standards of the public Internet are not sufficient to maintain the service quality needed for managed VoIP traffic.²⁷ There are not two parallel nationwide networks being deployed, as AT&T implies; rather, the telecommunications network is “one mixed network that is evolving,” as NASUCA points out, in which IP facilities replace TDM facilities in segments.²⁸ The vast majority of voice customers are still served by circuit-switched networks²⁹ and, as Sprint reports, AT&T intends to use its TDM network for years to come.³⁰ Therefore, there is no reason to prepare, from a regulatory perspective, for a fictitious moment in the

²³ *Time Warner Cable Request for Declaratory Ruling*, Memorandum Opinion and Order, 22 FCC Rcd 3513, 3516 ¶ 6 (WCB 2007) (VoIP provider was “sole user” of interconnecting CLEC’s wholesale telecommunications service).

²⁴ *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, Order on Remand, 15 FCC Rcd 385, 402-03 ¶ 37 (1999), *remanded on other grounds*, *WorldCom, Inc. v. FCC*, 246 F.3d 690 (D.C. Cir. 2001), cited in *Cbeyond et al.* Comments at 11-12 & n.25.

²⁵ Moreover, the FCC also has ancillary authority to establish an efficient set of POIs, as proposed by T-Mobile and Sprint, in order to ensure reasonable rates and practices for circuit-switched voice telecommunications service, at least during the transition from TDM to IP. *See, e.g.*, Reply Comments of T-Mobile USA, Inc. at 5-7, *Connect America Fund*, WC Dkt. No. 10-90 (Mar. 30, 2012); Comments of T-Mobile USA, Inc. at 6-7, *Connect America Fund*, WC Dkt. No. 10-90 (Feb. 24, 2012).

²⁶ *See, e.g.*, *Cbeyond et al.* Comments at 12; XO Comments at 9-14

²⁷ XO Comments at 11.

²⁸ NASUCA Comments at ii-iii; XO Comments at 8-14.

²⁹ CenturyLink Comments at 8.

³⁰ Sprint Nextel Comments at 9-13.

future when the entire TDM network is decommissioned and a new, parallel IP network is “turned on.” Rather than extending regulation to a new, previously unregulated broadband network, the application of existing interconnection rules, as proposed by T-Mobile and the vast majority of commenters, would simply continue the application of Sections 201 and 251 to the same, technologically evolving network. The public Internet would not be affected by these rules.

III. THE FCC SHOULD CONDUCT TESTS OF REGIONAL POI ARRANGEMENTS OPEN TO ALL CARRIERS

T-Mobile supports the concept of implementing test beds to determine the effectiveness of regulatory changes to spur the IP transition. As discussed above, the most important regulatory changes to foster the IP transition are elimination of the inefficient PSTN POI structure and establishment of a clear regulatory framework for IP interconnection.³¹ Therefore, T-Mobile supports moving forward with a test bed for regional IP interconnection at one or more efficient locations (collocated with IXPs)³² with a clear regulatory backdrop for carrier-to-carrier IP interconnection negotiations.³³ As several commenters point out, the provision of IP services and the exchange of IP traffic have already been proved viable from a technological perspective; what remains is to test a reasonable interconnection framework where all carriers agree to exchange IP traffic on reasonable terms.³⁴

As discussed above, a trial using an existing IXP as the default POI would impose few if any incremental costs on carriers since all are exchanging non-voice IP traffic at the IXP already.³⁵ Consistent with advocacy favoring state regulator inclusion in any IP trial, the Commission should

³¹ See *supra* Section I.

³² See *supra* Section I.A.

³³ See *supra* Section I.B.

³⁴ See, e.g., COMPTTEL Comments at 7-8; Cox Comments at 11-12; Sprint Nextel Comments at 7-8.

³⁵ See *supra* Section I.A.

work with state regulators to identify the location of the efficient POI(s) and to ensure a clear regulatory framework for negotiations. As noted above, the record indicates broad support for the principles underlying such a trial. T-Mobile commits to work with the Commission to build support from other carriers and stakeholders for a trial of the IP interconnection framework described here.

On the other hand, there is fairly strong opposition to AT&T's proposal to conduct a trial to determine whether a broadly deregulatory environment would help the IP transition. As several parties point out, AT&T's proposed trial would not help in proving out the crucial interconnection issues that will determine whether the IP transition fulfills its promise.³⁶ Other parties also have noted that AT&T's test bed proposal would serve no purpose, since AT&T would be on its best behavior during the "test" in an effort to demonstrate that no regulation is needed during the transition.³⁷

In sum, the record demonstrates that a trial or test bed might be beneficial to study the implementation of the IP transition, but only if it studies the issues that will truly be most relevant in determining the transition's success – all carriers' ability to negotiate interconnections in IP format on reasonable terms at efficient points.

³⁶ See, e.g., Sprint Nextel Comments at 4-8. See also Cox Comments at 11-12.

³⁷ See, e.g., COMPTTEL Comments at 8; Sprint Nextel Comments at 8.

IV. CONCLUSION

For all of the reasons discussed above, the Commission should facilitate the IP transition through the actions laid out in this reply and T-Mobile's initial comments in this proceeding.

Respectfully submitted,

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