

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of)	
)	
Numbering Policies for Modern Communications)	WC Docket No. 13-97
)	
IP-Enabled Services)	WC Docket No. 04-36
)	
Telephone Number Requirements for IP-Enabled Services Providers)	WC Docket No. 07-243
)	
Telephone Number Portability)	CC Docket No. 95-116
)	
Developing a Unified Intercarrier Compensation Regime)	CC Docket No. 01-92
)	
Connect America Fund)	WC Docket No. 10-90
)	
Numbering Resource Optimization)	CC Docket No. 99-200
)	
Petition of Vonage Holdings Corp. for Limited Waiver of Section 52.15(g)(2)(i) of the Commission's Rules Regarding Access to Numbering Resources)	
)	
Petition of TeleCommunication Systems, Inc. and HBF Group, Inc. for Waiver of Part 52 of the Commission's Rules)	
)	

REPLY COMMENTS OF HYPERCUBE TELECOM, LLC.

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EXECUTIVE SUMMARY

The Federal Communications Commission (the “Commission” or “FCC”) should focus on one important but limited objective: to ensure that scarce numbering resources are used effectively and efficiently, during and beyond the transition to an Internet-protocol (“IP”) based infrastructure, for the routing, exchange, and completion of voice calls with the same high level of quality and reliability traditionally achieved by the Public Switched Telephone Network (“PSTN”). All providers with direct access to numbers must be held responsible on a non-discriminatory basis for achieving the goal of high quality, seamlessly completed voice communications within a framework established by the Commission in cooperation with state regulators that makes each provider’s responsibilities clear. Based in part on HyperCube’s experience in analyzing the causes of certain rural call completion situations, HyperCube urges the Commission to:

1. Promote industry solutions, such as through FCC-sponsored workshops, to achieve effective call routing procedures that would be mandatory for all entities with direct access to numbers, to ensure that call completion ratios are not adversely affected by direct access to numbers by non-certificated providers.
2. Promote effective interconnection and ubiquitous call completion under the Section 251/252 nondiscrimination regime (which includes tariffing as a regulatory backstop), and encourage commercially negotiated arrangements, by establishing the four T-1 equivalent traffic volume standard for mandatory direct interconnection for the completion of voice traffic and confirming the current glide path to an all-IP environment, with those seeking alternative interconnection arrangements being responsible for such additional attendant costs as transport and media conversion.
3. Prohibit entities from avoiding their routing and intercarrier compensation obligations, such as by handing off traffic in irregular arrangements with providers that do not adhere to required and accepted industry practices.
4. Ensure that state regulators and numbering administrators, as well as the FCC, have the information necessary to manage numbering resources effectively.
5. Ensure compliance with the above regulatory policies.

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 2. Promote effective interconnection and ubiquitous call completion under the Section 251/252 nondiscrimination regime (which includes tariffing as a regulatory backstop), and encourage commercially negotiated arrangements, by establishing the four T-1 equivalent traffic volume standard for mandatory direct interconnection for the completion of voice traffic and confirming the current glide path to an all-IP environment, with those seeking alternative interconnection arrangements being responsible for such additional attendant costs as transport and media conversion. 7

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REPLY COMMENTS OF HYPERCUBE TELECOM, LLC.

HyperCube Telecom, LLC (“HyperCube”) submits these reply comments in response to initial comments addressing proposals to provide direct access to numbers to interconnected Voice over Internet Protocol (“IVoIP”) service providers.¹ HyperCube is a

competitive local exchange carrier (“CLEC”) whose offerings include wholesale services that allow the seamless transmission of communications between providers of all types. HyperCube implements practical, effective solutions that make the complex processes involved in traffic transport and exchange transparent to the end user.

INTRODUCTION AND OVERVIEW

In resolving the issues raised by this proceeding, the Commission should focus on one important but limited objective: to ensure that scarce numbering resources are used effectively and efficiently, during and beyond the transition to an Internet-protocol (“IP”) based infrastructure, for the routing, exchange, and completion of voice calls with the same high level of quality and reliability traditionally achieved by the PSTN. Consumer service quality expectations are justifiably high, and consumers draw no distinctions based on traditional or advanced network infrastructure. Neither should the Commission.

All providers with direct access to numbers must be held responsible on a non-discriminatory basis² for achieving the goal of high quality, seamlessly completed voice communications within a framework established by the Commission in cooperation with state regulators that makes each provider’s responsibilities clear. These reply comments highlight

¹ *See Numbering Policies for Modern Communications, Notice of Proposed Rulemaking, Order and Notice of Inquiry*, 28 FCC Rcd. 5842 (2013) (“*Direct Access NPRM/NOI*”). *See also Wireline Competition Bureau Announces Comment Cycle for NPRM and NOI on Direct Access to Telephone Numbers, Public Notice*, WC Dkt. 13-5, *et al.*, DA 13-1430 (rel. Jun. 24, 2013).

² Non-discrimination obligations are fundamental to the competitive telecommunications marketplace, and the Commission’s oversight is intended to promote a level playing field to support competition. *See, e.g.*, 47 U.S.C. § 202(a) (prohibiting unreasonable discrimination, *inter alia*, in common carrier charges and practices); 47 U.S.C. § 251(a) (stating general duty of carriers to interconnect with other carriers); 47 U.S.C. §§ 252(b)(5), 252(c)(1) (imposing bilateral obligations of good faith negotiation regarding interconnection).

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specific areas where Commission action can best promote achievement of this goal while conserving numbering resources. In particular, HyperCube urges the Commission to:

1. Promote industry solutions, such as through FCC-sponsored workshops, to achieve effective call routing procedures that would be mandatory for all entities with direct access to numbers, to ensure that call completion ratios are not adversely affected by direct access to numbers by non-certificated providers.
2. Promote effective interconnection and ubiquitous call completion under the Section 251/252 nondiscrimination regime (which includes tariffing as a regulatory backstop), and encourage commercially negotiated arrangements, by establishing the four T-1 equivalent traffic volume standard for mandatory direct interconnection for the completion of voice traffic³ and confirming the current glide path to an all-IP environment, with those seeking alternative interconnection arrangements being responsible for such additional attendant costs as transport and media conversion.
3. Prohibit entities from avoiding their routing and intercarrier compensation obligations, such as by handing off traffic in irregular arrangements with providers that do not adhere to required and accepted industry practices.
4. Ensure that state regulators and numbering administrators, as well as the FCC, have the information necessary to manage numbering resources effectively.
5. Ensure compliance with the above four regulatory policies.

HyperCube urges the Commission to adopt these principles and procedures if it decides to allow non-carrier providers to obtain direct access to numbers. Providers that do not assume

³ See, e.g., Comments of HyperCube Telecom, LLC, on Further Notice of Proposed Rulemaking, WC Dkt. 10-90, *et al.* (filed Feb. 24, 2012) (“*HyperCube FNPRM Comments*”), at ii (“The [direct] interconnection arrangement [negotiated for four T-1 equivalent traffic volumes] would be for TDM traffic until the ILEC was required to provide IP-to-IP interconnection, but could be used for IP-formatted traffic before that date if the interconnecting carrier assumed responsibility for any required media conversion.”). See also *id.* at 7-8; Reply Comments of Hypercube Telecom, LLC on Further Notice of Proposed Rulemaking, WC Dkt. 10-90, *et al.* (filed Mar. 30, 2012) (“*HyperCube FNPRM Reply Comments*”) at 3-8.

the responsibilities attendant on direct access to numbers have many alternative options for traffic routing.⁴

DISCUSSION OF RECOMMENDED POLICIES

- 1. Promote industry solutions, such as through FCC-sponsored workshops,⁵ to achieve effective call routing procedures that would be mandatory for all entities with direct access to numbers, to ensure that call completion ratios are not adversely affected by direct access to numbers by non-certificated providers.**

In a recent *ex parte* meeting,⁶ HyperCube representatives shared HyperCube's analysis of several scenarios in which HyperCube had found atypical ratios of call completion to certain local exchange carriers in rural areas ("RLECs").⁷ Through internal analysis of traffic information available to HyperCube, and, in most cases, through cooperative efforts of the affected RLECs, the sources of the call completion problems were identified.

⁴ The record demonstrates that providers have multiple options for traffic routing and completion through intermediate providers, whether or not the originating provider has direct access to numbers. *See* Comments of Bandwidth.com, Inc., WC Dkt. 13-97, *et al.* (Jul. 19, 2013) ("*Bandwidth Comments*") at 9. (All subsequent citations herein to "Comments" refer to initial comments filed July 19, 2013, in WC Dkt. 13-97, *et al.*, unless otherwise noted.)

⁵ HyperCube previously raised this proposal in its initial comments in this docket. Comments of HyperCube Telecom, LLC, WC Dkt. 13-39 *et al.* (filed Jul. 19, 2013) ("*HyperCube Comments*") at 12–16. *See also* Reply Comments of Shockey Consulting, WC Dkt. 13-39, *et al.* (filed Jul. 19, 2013) ("*Shockey Comments*") at 10 (Commission should "nudge" industry to develop technical solutions through an open, multi-stakeholder process).

⁶ *See* Letter from Helen E. Disenhaus, Counsel for HyperCube Telecom, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Dkt. 13-39, *et al.* (Jul. 18, 2013) ("*HyperCube Rural Call Completion Ex Parte*").

⁷ HyperCube identified these scenarios because of observed "significant discrepancy between wholesale rates for toll termination into the RLECs' networks (as updated and provided by various vendors in their 'rate decks') and the tariffed access rates of the RLEC." Two of the situations were found to involve non-traditional toll termination routes utilizing "end-user consumer service offerings to bypass switched access interconnections." *Id.* (Attachment at 2). Such irregular least cost routing arrangements rely on bypass of switched access interconnections, as opposed to negotiated arrangements between carriers in the call path.

In most cases, the affected RLEC or other provider quickly took action to resolve the problem. In one case, a shortage of facilities contributed to the problem, but in all of the other fully explored situations, there were atypical routing arrangements. In some cases, the issue was the failure to update standard industry databases properly. In others, unauthorized routing arrangements hampered effective call routing and billing. The key to solving the problems, however, was cooperation among multiple providers in the call completion path, because no single provider had complete information about the call routing.⁸

In this proceeding, a number of commenting parties have raised call routing issues,⁹ and a number have addressed industry database implications of direct access to numbers by non-carrier IVoIP providers.¹⁰ Other parties have suggested approaches that may help ensure effective call routing in the mixed time division multiplexing (“TDM”)/IP environment. In HyperCube’s view, however, so long as there is a mixed IP/TDM environment, because use of the local exchange routing guide (“LERG”) is mandatory in the TDM environment, unless all providers are required to provide and utilize up-to-date LERG information, the call completion problems

⁸ HyperCube’s experience demonstrates that cooperative industry efforts can resolve complicated technical issues, such as those that imperil ubiquitous call completion, resulting in restoration of P.01 grade service. The analysis also demonstrates the importance of having all providers obligated to provide accurate, up-to-date information to industry databases, including the local exchange routing guide (“LERG”), and to comply with industry practices regarding transmission of signaling information, in order for calls to be routed accurately to their destinations, and for carriers to have the tools and information necessary to resolve anomalous situations and preserve the integrity of the communications network.

⁹ See, e.g., Comments of CenturyLink (“*CenturyLink Comments*”) at 18–19 (expressing concern about requests, or demands, from numbering trial participants for non-standard, exception-based routings, with the extra costs to be borne by CenturyLink).

¹⁰ See, e.g., Comments of Neustar, Inc. at iii (“[S]everal providers have begun to explore use of the NPAC as an addressing registry to support VoIP routing. Neustar is assisting with that activity.”); Comments of Telcordia Technologies, Inc., d/b/a iconectiv at 3 (“iconectiv does not impose restrictions on access to the LERG, and only requires that a provider be an AOCN to input data into BIRRDs. This is true both for traditional PSTN and VoIP providers.”).

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so well documented in WC Docket 13-39 will continue.¹¹ Detailed reports disclosing the practices and procedures employed by the numbering trial participants may provide additional insight into possible appropriate required practices.¹² At this stage, however, there is insufficient information for the Commission to determine whether alternative approaches may be effective.

HyperCube therefore reiterates its call for the Commission, under the auspices of its Technological Advisory Council, to promote industry workshops to address such issues as call routing, call signaling information, and database updating and use, in a forum or workshop in which experts from all types of stakeholders may participate.¹³ The Commission can then publish specific potential solutions for public comment. In some cases, modifications of Commission rules will be appropriate to address call signaling issues, as has been the case in the past.

¹¹ Access to the LERG is available to both non-carriers and carriers. *Id.* Cf. Comments of NTCA – The Rural Broadband Association (“*NTCA Comments*”) at 7 (“If VoIP providers have direct access to numbers they should have their own codes like carriers do today. If VoIP providers are given direct access to numbering resources, they should be subject to the same procedures for populating and updating the appropriate databases as carriers are today.”). Use of the LERG does not preclude providers from entering into alternative IP-IP arrangements; it merely requires inclusion in the LERG of an available “last-resort” “Switch Homing Arrangement” or “SHA” routing that provides for homing to a local exchange carrier (“LEC”) tandem. *See HyperCube Comments* at 13; *see also NTCA Comments* at 7. Such arrangements are available to non-certificated providers. *See* Letter from Phillip R. Marchesiello, Counsel to Millicorp, to Marlene H. Dortch, Secretary, WC Dkt. 13-97, *et al.* (Jul. 15, 2013) at 1–2 (reporting on pre-trial preparatory activities). Other trial participants have also committed to use the LERG. *See* Comments of Vonage Holdings Corp. at 22; *see also* Comments of SmartEdgeNet, LLC (“*SmartEdgeNet Comments*”) at 5 (IVoIP providers with direct access to numbers will be identified in LERG and similar industry databases.). *See also Shockey Comments* at 11 (pointing out that NECA OCNs are regularly used for SIP/IMS traffic).

¹² Participants in the numbering trials are required to submit monthly reports 60 days after submitting requests for numbers to number administrators. *Direct Access NPRM/NOI*, ¶¶ 103, 107; *see also Numbering Policies for Modern Communications, Order*, DA 13-1397 (WCB Jun. 17, 2013). To date, the public record in this proceeding does not include copies of any such reports.

¹³ Cf. Comments of Comcast Corp. (“*Comcast Comments*”) at 11 (FCC can encourage industry standards development but industry should take the lead in establishing parameters).

Until there is industry consensus or the Commission establishes regulatory obligations in this area, however, and until the numbering trials are completed, the Commission should not prematurely expand the number of entities with direct access to numbers. Otherwise, in the absence of established parameters binding on all providers, the Commission can expect to be asked to resolve more call completion issues.

- 2. Promote effective interconnection and ubiquitous call completion under the Section 251/252 nondiscrimination regime (which includes tariffing as a regulatory backstop),¹⁴ and encourage commercially negotiated arrangements, by establishing the four T-1 equivalent traffic volume standard for mandatory direct interconnection for the completion of voice traffic and confirming that the current glide path to an all-IP environment remains in place, with those seeking alternative interconnection arrangements responsible for such additional attendant costs as transport and media conversion.¹⁵**

By clearly reiterating that the nondiscriminatory interconnection obligations under Sections 251 and 252¹⁶ remain applicable during the glide path¹⁷ to an all-IP environment, the

¹⁴ See, e.g., *HyperCube FNPRM Comments* at 2-3 (endorsing FCC Commission efforts to bring greater efficiency to the ICC system by promoting good faith negotiation of commercial agreements between service providers, reducing reliance on tariffs as the primary documents governing traffic exchanges); *HyperCube FNPRM Reply Comments* at 10 (citing FCC's expectation of increasing industry reliance on commercial agreements instead of tariffs to govern intercarrier arrangements).

¹⁵ See, e.g., *HyperCube FNPRM Comments* at ii, 7-8; *HyperCube FNPRM Reply Comments* at 3-8. All providers with direct access to numbers should be subject to the same obligation to pay the applicable costs of interconnection with ILECs during the transition period to ensure ubiquitous call completion for all consumers. Cf. *Connect America Fund, Report and Order and Further Notice of Proposed Rulemaking*, 26 FCC Rcd. 17663 (2011) (“*USF/ICC Transformation Order*”), *pets. for review pending sub nom. In re: FCC 11-161*, No. 11-9900 (10th Cir. filed Dec. 8, 2011) at ¶1324 and n.2399 (quoting Comments of The National Exchange Carrier Association, Inc., *et al.*, 10-90 (filed Apr. 1, 2011) at 30) (“Small carriers often have difficulty convincing other carriers to negotiate interconnection agreements with them, particularly where those other carriers can easily terminate their traffic via a transit or tandem provider and thus have no direct contact with the terminating rural carrier at all. In such circumstances, sending carriers are increasingly arguing that because there is no interconnection agreement, they can pay the terminating rural carrier whatever rate they deem appropriate, if anything at all.”).

¹⁶ 47 U.S.C. §§ 251, 252 (2013).

Commission can minimize prolonged disputes and efforts to evade these responsibilities that will imperil seamless, transparent call completion. Otherwise, not only will calls be dropped, but also the intercarrier compensation (“ICC”) regime that is essential to fund network operations during the transition will be flouted by unauthorized arrangements that do not adhere to regulatory requirements.¹⁸ The peering-based network-interconnection regime proposed by several parties (sometimes referred to as a “flat network” regime) is not a solution, and without regulatory oversight could result in numerous ongoing peering disputes that actually increase call-completion problems.¹⁹ Nor should the standard for completion of voice calls be relaxed to the “best efforts” call completion standards applicable to Internet peering arrangements or text messages.²⁰

The Commission should re-emphasize that the statutory Section 251/252 nondiscriminatory interconnection and intercarrier compensation regime applies regardless of whether traffic is transported or exchanged in TDM, IP, or mixed TDM/IP form. All providers with direct access to numbers, whether or not certificated carriers, should be subject to this

¹⁷ *USF/ICC Transformation Order* at ¶117 (describing transition glide path).

¹⁸ Non-certificated providers have the ability to address call completion issues if they are willing, or required, to do so. Vonage, for example, recently informed the Commission that it had implemented new procedures and a new platform for routing PSTN-bound calls that had reduced its rate of call completion complaints by 40% between the first quarter of 2011 and the fourth quarter of 2012, although it did not disclose the volume of such complaints. The Vonage filing also acknowledged the existence of incentives to circumvent access charge payments through least cost routing arrangements (“LCRs”). Letter from Ronald W. Del Sesto, Jr., Counsel to Vonage Holdings Corp., WC Dkt. 13-39 (Aug. 1, 2013) at 1–2. As noted, *supra* n.7, some LCR arrangements involve unauthorized bypass of carrier interconnections.

¹⁹ *Comcast Comments* at 9 (“The accurate population of key databases, such as the [LERG] database, is essential today to ensure that voice traffic is reliably transmitted to the called locations.”).

²⁰ *Comments of Comptel* at 5 n.17 (distinguishing IP-based services using the public Internet from managed services intended to achieve P.01 quality service for voice traffic).

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obligation.²¹ The Commission will thereby treat competitors equally and minimize both interconnection disputes and call completion problems. This uniform approach will also incentivize providers to enter into commercially negotiated arrangements, so long as the tariffing regime remains in place as a backstop to ensure call completion. Many state regulators also have argued that the applicable rules should be technology-neutral, with regulatory parity for all providers with access to numbers.²²

HyperCube continues to urge the Commission to clarify the interconnection obligation by establishing a bright line for mandatory negotiation of direct interconnection arrangements.²³ Under HyperCube's economically-based approach, any provider with voice traffic to exchange that is equivalent in volume to four T-1s²⁴ would be entitled to negotiate a direct interconnection

²¹ As several parties have noted, non-carriers do not have a statutory right to interconnection, *Bandwidth Comments* at 7; *Vonage Comments* at 18; *CenturyLink Comments* at 10 n.14. As CenturyLink has further noted, the Commission expects carriers to negotiate in good faith during the transition regardless of the technology involved. *Id.* at 17 n.31. See also *NTCA Comments* at 6 (“VoIP providers with direct access to numbers should be required to abide by the existing intercarrier compensation rules”).

²² See Comments of the Public Service Commission of Wisconsin (“*WI-PSC Comments*”) at 13 (general obligations), 14 (enforcement); Comments of the Michigan Public Service Commission at 7; Comments of the New Jersey Division of Rate Counsel (“*NJ Rate Counsel Comments*”) at ii, 9-10; Joint Comments of the Pennsylvania Public Utility Commission, New York Public Service Commission, and Indiana Utility Regulatory Commission (“*Joint State Comments*”) at 3, 5. Like HyperCube, state commissions also support equitable sharing of the costs of numbering administration. *HyperCube Comments* at 6; *NJ Rate Counsel Comments* at 10–11; *Joint State Comments* at 6.

²³ Under HyperCube's proposal, indirect interconnection for the exchange of voice traffic would be mandatory for all providers on request.

²⁴ Some interconnection agreements have required direct interconnection when carriers have had the equivalent of three T-1s of traffic to exchange. See, e.g., the General Terms and Conditions of the Interconnection Agreement between The Southern New England Telephone Company d/b/a AT&T CONNECTICUT and Cablevision Lightpath - CT, Inc., Attachment 0-2 (Sept. 13, 2011) (“§ 8.8.1 When Transit Traffic originated by CLEC requires seventy-two (72) or more trunks for three consecutive months, upon sixty (60) days written notice from AT&T CONNECTICUT, CLEC shall establish a direct trunk group or alternate transit arrangement between itself and the Third Party Terminating Carrier. Once a Trunk Group has been

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arrangement with another provider. An RLEC would have a high burden of proof in a Section 251(f) proceeding to demonstrate that a proposed interconnection arrangement would impose undue hardship on it. With economically-based interconnection arrangements, where the jurisdictional nature of the traffic is properly indicated and the compensation is in accord with the nature of the traffic, however, there should be benefit, not hardship, for both parties.

Under HyperCube's proposal, prior to completion of the glide path to an all-IP environment for the affected carrier, the provider seeking an interconnection arrangement that required additional costs (for example, for media conversion or additional transport costs to an agreed meet-point), would be responsible for such additional costs. This would ensure that interconnection arrangements are economically sound and do not favor one provider while harming the other. IP-based providers whose business plans depend on limiting the number of meet-points could implement those plans, but they would bear the costs of doing so, and they would not be permitted to force their preferred arrangements²⁵ on, for example, RLECs whose business plans did not contemplate such additional costs.

Implementation of this approach should significantly reduce the number of disputes about interconnection and ensure a level, economically sound playing field, in which providers make rational decisions about interconnection arrangements.

established, CLEC agrees to cease routing Transit Traffic through the AT&T CONNECTICUT Tandem to the Third Party Terminating Carrier (described above), unless AT&T CONNECTICUT and CLEC mutually agree otherwise.”). This agreement is available at: [http://www.dpuc.state.ct.us/Tariff.nsf/2b88fcc4231ad37e85256aa3004fe690/852565c600727ddb85257acc006dfe52/\\$FILE/Cablevision%20Lightpath%20%20CT,%20Inc~ICA~CT.pdf](http://www.dpuc.state.ct.us/Tariff.nsf/2b88fcc4231ad37e85256aa3004fe690/852565c600727ddb85257acc006dfe52/$FILE/Cablevision%20Lightpath%20%20CT,%20Inc~ICA~CT.pdf) .

²⁵ Cf. *CenturyLink Comments* at 13, 17-18 (protesting demands that CenturyLink reconfigure its network and bear media conversion costs to suit the convenience of numbering trial participants demanding direct IP interconnection in central offices where CenturyLink does not offer IP services to its end users).

3. Prohibit entities from avoiding their routing and intercarrier compensation obligations, such as by handing off traffic in irregular arrangements with providers that do not adhere to required and accepted industry practices.²⁶

The record provides substantial evidence that some providers have attempted to evade their call routing and intercarrier compensation obligations by handing off traffic in irregular arrangements that do not adhere to accepted industry practices with respect to database updating and utilization.²⁷ At least one commenting party seeks to push responsibility for call completion onto its partners,²⁸ although another has stated that providers should at a minimum be required to confirm their tandem provider can “properly” route and complete calls.²⁹

To ensure ubiquitous call completion, the Commission should expressly prohibit routing arrangements that ignore industry standard routing and compensation requirements. Providers with direct access to numbers should also be required to ensure that all call signaling information correctly identifies the provider whose numbers are used. If the Commission is serious about addressing this problem effectively, it should require all providers in a call path to cooperate to

²⁶ As indicated by HyperCube’s recent analysis of certain below-expectation rates of call completion to RLECs, such irregular arrangements are often the source of call completion deficiencies and service that is substantially below the P.01 grade of service the PSTN has sought to provide. *See HyperCube Rural Call Completion Ex Parte*; see also discussion *supra* at 4–5.

²⁷ Bandwidth has discovered “circumstances involving the unauthorized use of its numbers with third-party non-standardized routing arrangements.” *Bandwidth Comments* at 10. Bandwidth has proposed that the Commission require traffic to be routed “in a manner the underlying carrier approves or directly manages.” *Id.* at 17.

²⁸ *SmartEdgeNet Comments* at 14 (not IVoIP providers but their carrier partners responsible for ICC). *Cf. NTCA Comments* at 7 (number-holder should be held liable for intercarrier compensation if its partner did not fulfill its obligations).

²⁹ *Vonage Comments* at 19. This is not the same, however, as ensuring that the VoIP provider assumes responsibility for compliance with routing and ICC obligations. Vonage, moreover, proposed that the partner LEC, not the VoIP provider, certify “that it has the right to route traffic over the local tandem.” *Id.* at 19-20.

investigate and terminate possible improper routing and compensation arrangements, with an expedited mediation process available to bring reluctant parties to the table.

The Commission can use its plenary authority over numbers³⁰ to condition direct access to numbers by uncertificated IVoIP providers on compliance with key interconnect, routing, and compensation obligations. It is both fair³¹ and essential for the seamless functioning of the communications system that providers with direct access to numbers accept the critical responsibilities, as well as the advantages, of certificated carriers.

All providers with direct access to numbers must be required to ensure that they, and all providers to which they hand off traffic, comply with accepted industry practices for call completion (including the traditional P.01 grade of service standard), utilization and timely updating of call routing databases, and payment of intercarrier compensation obligations. With these requirements in place, many routing issues will disappear. For more persistent problems, it will be much easier to identify and eliminate the source, and to ensure that routing arrangements are not used to evade ICC obligations.

4. Ensure that state regulators and numbering administrators, as well as the FCC, have the information necessary to manage numbering resources effectively.

In its initial comments,³² HyperCube endorsed various state commission proposals to provide state regulators information necessary to ensure that they can continue to manage

³⁰ The FCC has plenary authority over numbers pursuant to Section 251(e) of the Communications Act. 47 U.S.C. § 251(e) (2013).

³¹ The California Public Utilities Commission recommends that the Commission consider, among other factors, the competitive implications of its decision on direct access. Comments of the California Public Utilities Commission, *et al.* (“CPUC Comments”) at 19.

³² See *HyperCube Comments* at 9 (recommending adoption of proposals of the Public Service Commission of Wisconsin that provided additional information to state regulators and public

numbering resources effectively. Many of these proposals incorporate conditions imposed on or voluntarily agreed to by participants in the numbering trials as prerequisites for trial participation.

HyperCube also supports a number of additional state commission recommendations presented in initial comments in this proceeding. The Public Service Commission of Wisconsin, for example, recommends an electronic system for data exchanges between state regulators and the Commission to assist in number management.³³ A number of state commissions urge the Commission to provide them advance notice before awarding numbers to uncertificated carriers, with several recommending that state regulators be given 30 days' prior notice.³⁴

Numbers are too important to the effective working of the communications system to risk foreclosing efficient state number administration by inadequate information sharing and coordination. The Commission should thus continue to cooperate with the states in effective number management and conservation by meeting the information requirements that state regulators have demonstrated they will need if many more providers gain direct access to scarce number resources.

5. Ensure compliance with the above regulatory policies.

The straightforward policies and procedures HyperCube proposes above will be meaningless if they are ignored. HyperCube therefore continues to support effective oversight of all providers with direct access.³⁵ In particular, the Commission should require all providers to

safety benefits beyond those included in the conditions imposed on the initial numbering trial participants).

³³ *WI-PSC Comments* at 5.

³⁴ *See, e.g., CPUC Comments* at 16.

³⁵ *See HyperCube Comments* at 8–10.

provide accurate and complete information to regulators,³⁶ database administrators, and other providers; honor interconnection obligations, including the obligation of good faith negotiation; and honor the established ICC obligations. Nor should any providers be permitted to evade these responsibilities by handing off traffic to those that flout these obligations and responsibilities. To expedite resolution of issues that threaten ubiquitous call completion in accordance with industry norms and obligations, the Commission also could establish an accelerated informal complaint procedure intended to identify and resolve non-compliant arrangements.

CONCLUSION

HyperCube urges the Commission to adopt the principles and procedures discussed above if it decides to allow non-carrier providers to obtain direct access to numbers. These recommendations are intended to make such providers' responsibilities clear and unambiguous, and, most importantly, to ensure that the public will receive the high quality, ubiquitous telecommunications service it expects and deserves.

Respectfully submitted,



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³⁶ The Pennsylvania Public Utility Commission emphasized the need for up-to-date contact information for all service providers. Comments of Pennsylvania Public Utility Commission at 3, 8-9; *see also Joint State Comments* at 3 (accurate provider contact information essential to state monitoring of number utilization).

