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Recent Developments

Voice Over Internet Protocol

Joseph Gratz*

FCC Chairman Michael Powell recently called Voice over Internet Protocol the “killer app for legal policy change.”¹ “VoIP,” as the technology is known, has the potential to radically reorder the voice telecommunications industry and the regulatory apparatus under which the industry operates. VoIP is a category of technologies that route real-time voice conversations over the Internet. VoIP can be used to describe everything from a computer-to-computer voice conversation, to a call between an Internet-connected computer and a standard telephone, to a long-distance call between two ordinary telephones where the long distance provider routes the call over the Internet. Consumers can currently choose from a wide variety of VoIP providers that offer services to replace traditional copper-line local phone service. Both traditional phone companies² and VoIP start-ups³ offer these services.

In many ways, a phone connected to a VoIP line operates as a phone connected to a traditional trunked copper telephone line would. The user has a normal telephone number in a regular area code and is reachable from any telephone. When

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1. Declan McCullagh, *FCC Chairman Calls for New Telecom Laws*, CNET NEWS.COM, August 23, 2004 (quoting Powell’s remarks at a Progress and Freedom Foundation conference), at http://news.com.com/FCC+chairman+calls+for+new+telecom+laws/2100-1028_3-5321042.html (last visited Oct. 29, 2004).

2. See e.g., AT&T CallVantage VoIP Service, at <http://www.usa.att.com/callvantage/> (last visited Oct. 29, 2004); Verizon.VoiceWing VoIP Service, at <https://www22.verizon.com/ForYourhome/voip/voiphome.aspx> (last visited Oct. 29, 2004).

3. See e.g., Vonage DigitalVoice VoIP Service, at <http://www.vonage.com/> (last visited Oct. 29, 2004); Packet8 VoIP Service, at <http://www.packet8.net/> (last visited Oct. 29, 2004); BroadVox Direct VoIP Service, at <http://www.broadvoxdirect.com/> (last visited Oct. 29, 2004).

the user wishes to make a call, she picks up her normal receiver and dials the number of any phone, VoIP or not. Most consumer VoIP⁴ configurations consist of a standard telephone plugged into an “Analog Telephone Adapter,” which is connected to the customer’s broadband Internet service.⁵ In other configurations, special VoIP telephones are connected directly to the Internet. Some VoIP providers offer “softphones,” software packages that allow consumers to use their computers as VoIP telephones.⁶

To the user, the VoIP service is transparent; subscribers send and receive calls as they would from any other telephone. Behind the scenes, though, the connection is quite different from traditional phone networks. The key difference is the way the call gets from one phone to the other. In a VoIP call, the voice conversation is digitized and converted into a series of packets.⁷ The packets are routed over the Internet via the subscriber’s broadband connection like any other packets, such as those used for web pages. The Internet moves all packets to their destination as quickly as possible,⁸ regardless of the information they contain.

If the call terminates to a normal phone line, part of the Public Switched Telephone Network (PSTN), the packets are sent to the VoIP provider’s “PSTN gateway.”⁹ As long as the

4. For the balance of this Technology Overview, the term “VoIP” will be used to refer to carrier-grade VoIP services that replace consumers’ local phone lines. Other VoIP services, such as computer-to-computer services, will be referred to more specifically.

5. See e.g., VOIP-info.org, *Analog Telephone Adapters* (describing the functions of analog telephone adapters and listing various models), at <http://www.voip-info.org/tiki-index.php?page=Analog+Telephone+Adapters> (last modified Oct. 28, 2004).

6. See e.g., Vonage Softphone, at <http://www.vonage.com/features.php?feature=softphone> (last visited Oct. 29, 2004).

7. See Petition for Declaratory Ruling that AT&T’s Phone-to-Phone IP Telephony Services are Exempt from Access Charges, 19 F.C.C.R. 7457, 7459 (2004), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-97A1.pdf.

8. See Petition for Declaratory Ruling that AT&T’s Phone-to-Phone IP Telephony Services are Exempt from Access Charges, 19 F.C.C.R. 7457 (2004), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-97A1.pdf.

9. See Charles M. Davidson, Presentation at the FCC VoIP Forum, at slide 10 (December 1, 2003), available at <http://www.google.com/url?sa=U&start=1&q=http://www.fcc.gov/voip/presentations/davidson.ppt&e=7620>.

VoIP provider has “PSTN gateway” local to the call’s recipient, the provider does not pay long distance. These calls are “local” since they make the leap from the Internet to the PSTN once the PSTN portion of the call is local. Therefore, affordable calls can be made to anywhere in the world where a VoIP provider has setup a PSTN gateway. In fact, some consumer VoIP providers include unlimited local calls to Western Europe or Asia.¹⁰

Alternatively, a call can terminate to another subscriber on the same VoIP service. In this situation, the packets are sent from subscriber to subscriber over the Internet, never reaching the PSTN.¹¹

STATE REGULATION

The residential telephone service industry has traditionally operated as a regulated monopoly, because competition in local telephone service could result in wasteful duplication of equipment, operating expenses, and services.¹² Before offering telephone service to the public, a company was required to obtain a certification of public interest, convenience, and necessity from state utilities regulators.¹³ Because there was no competition in the market for local telephone service, rates were regulated in order to avoid monopoly profits for telephone companies.¹⁴

While VoIP operates, from a consumer standpoint, like standard telephone service, the technical differences between the two types of telephone service may justify different regulatory treatment. This section will briefly review the categories of service created by the Telecommunications Act of 1996. It will then examine the ways in which those categories have been applied to VoIP services by state regulators.

10. See *e.g.*, Lingo VoIP Service (offering unlimited calls to Western Europe or Asia as part of a standard calling plan), at <https://www.lingo.com/guWeb/com/primustel/gu/presentation/international/InternationalController.jspf> (last visited Oct. 29, 2004).

11. See Davidson, *supra* note 9.

12. See Warren G. Lavey, *The Public Policies That Changed the Telephone Industry Into Regulated Monopolies: Lessons from Around 1915*, 39 FED. COMM. L.J. 171, 180 (1987).

13. See *id.* at 184 n.37.

14. See *id.* at 186.

THE TELECOMMUNICATIONS ACT OF 1996

The Telecommunications Act of 1996 defined three terms central to the regulatory treatment of VoIP. “Telecommunications,” as defined by the Telecommunications Act, is “the transmission, between or among points specified by the user, of information of the user’s choosing, without change in the form or content of the information as sent and received.”¹⁵ A “telecommunications service” is defined as “the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.”¹⁶ The Telecommunications Act defines “information service” as:

[T]he offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.¹⁷

While the Telecommunications Act allows states to regulate telecommunications services, it limits the regulation of information services.¹⁸ Any state regulation of information services is thus preempted.

VONAGE V. MPUC

The first judicial ruling on the regulatory treatment of VoIP came in *Vonage Holdings Corp. v. Minnesota Public Utilities Commission*.¹⁹ In September 2003, in response to a complaint from the Minnesota Department of Commerce, the Minnesota Public Utilities Commission (MPUC) issued an order concluding that Vonage, a consumer VoIP service provider, was required to adhere to the regulatory requirements applicable to traditional wireline telephone companies if it wished to operate in Minnesota.²⁰ These

15. 47 U.S.C. § 153(43) (2000).

16. *Id.* § 153(46).

17. *Id.* § 153(20).

18. *See* *Vonage Holdings Corp. v. Minnesota Pub. Utilities Comm’n*, 290 F. Supp. 2d 993, 994 (D. Minn. 2003) (“Congress also differentiated between ‘telecommunications services,’ which may be regulated, and ‘information services,’ which like the Internet, may not”).

19. *Id.*

20. *Minn. Dep’t of Commerce v. Vonage Holding Corp.* No. P-6214/C-03-108, at 8 (Minn. Pub. Utils. Comm’n Sept. 11, 2003), *available at* <http://www.puc.state.mn.us/docs/orders/03-0108.pdf>.

requirements included obtaining state certification that Vonage possessed “the technical, managerial, and financial resources to provide the proposed telephone services,”²¹ filing a tariff,²² and filing a 911 plan.²³ Vonage sued for a preliminary injunction preventing the MPUC from enforcing its order.²⁴

The court determined that the Telecommunications Act, together with related FCC regulations, could preempt state laws.²⁵ The court noted the long history of regulatory restraint regarding enhanced services, which culminated in the distinction between “telecommunications services” and “information services” in the Telecommunications Act.²⁶ Because Title II of the Telecommunications Act was intended to regulate telecommunications services, while leaving information services unregulated, the court found that any attempted state regulation of information services would be preempted.²⁷

The court’s decision prompted the question of whether the service provided by Vonage is a “telecommunications service” or an “information service.” The MPUC argued that the Vonage service was a “telecommunications service” because it was functionally identical to wireline telephone service, the paradigm. MPUC further argued that because Vonage held itself out as a “phone company, and Vonage users picked up telephone handsets, dialed numbers, and received phone calls in the usual manner, the Vonage service must be a “telecommunications service.”²⁸ Also, the FCC had tentatively ruled that “[phone-to-phone] IP telephony lacks the characteristics that would render them ‘information services’ within the meaning of the statute, and instead bear the characteristics of ‘telecommunications services.’”²⁹

21. *See id.* at 3, 9 (citing Minn. Stat. § 237.16, subd. 1(b) which requires certification).

22. *See id.* at 9; Minn. Stat. § 237.07 (2003) (requiring the filing of tariffs).

23. *Minn. Dep’t of Commerce*, No. P-6214/C-03-108 at 9.

24. *Vonage*, 290 F. Supp. 2d at 996.

25. *Id.* at 1002-03 (citing *Louisiana Pub. Serv. Comm’n v. FCC*, 476 U.S. 355, 368 (1986)).

26. *Vonage*, 290 F. Supp. 2d at 997-99 (citing *In the Matter of Amendment of Section 64.702 of the Commission’s Rules and Regulations (Second Computer Inquiry)*, 77 FCC 2d 384, ¶ 5 (1980) (Final Decision)).

27. *Vonage*, 290 F. Supp. 2d at 998-99.

28. *Id.* at 1001 (characterizing the MPUC’s reasoning as a “simplistic ‘quacks like a duck’ argument”).

29. *Federal-State Joint Board on Universal Service*, 13 F.C.C.R. 11,501,

The court used the FCC's definition of 'phone-to-phone IP telephony' as the starting point for its analysis. In the *Universal Service Report*, the Commission stated that:

In using the term 'phone-to-phone' IP telephony, we tentatively intend to refer to services in which the provider meets the following conditions: (1) it holds itself out as providing voice telephony or facsimile transmission service; (2) it does not require the customer to use CPE [meaning customer premises equipment – devices that must be installed at the customer's location for the service to work] different from that CPE necessary to place an ordinary touch-tone call (or facsimile transmission) over the public switched telephone network; (3) it allows the customer to call telephone numbers assigned in accordance with the North American Numbering Plan, and associated international agreements; and (4) it transmits customer information without net change in form or content.³⁰

The court adopted the FCC's tentative definition and held that while the Vonage service clearly meets conditions one and three, since it is advertised as telephone services and allow users to dial normal telephone numbers, it does not meet conditions two and four.³¹ The court noted that the Vonage service "requires CPE different than what a person connected to the PSTN uses to make a touch-tone call."³² – namely, the Analog Telephone Adapter that the user installs between her telephone and broadband connection. Further, a "net change in form or content" takes place when a Vonage user places a call because:

If the end user is connected to the PSTN, the information transmitted over the Internet is converted from IP into a format compatible with the PSTN When Vonage's users communicate with other customers in computer-to-computer IP telephony, the two customers are again using the Internet to transmit data packets which, by their very nature change form and do not come in contact with the regulated PSTN.³³

Thus, the court ruled that the information in transmitted via the Vonage service is *data packets*, not the user's voice. Therefore, the Vonage service goes beyond the FCC's definition of "phone-to-phone IP telephony" by requiring special CPE and changing the form of the call. For these reasons, the court concluded Vonage was an "information service", not a "telecommunications service."³⁴ As such, state regulation was

11,544 (1998) (Report to Congress).

30. *Id.* at 11,543-44.

31. *Vonage*, 290 F. Supp. 2d at 1000.

32. *Id.*

33. *Id.*

34. *Id.* at 1001.

preempted by the Telecommunications Act of 1996.³⁵

VONAGE V. NYPSC

On May 19, 2004, the New York Public Service Commission issued an order requiring Vonage to apply for a certificate of public convenience and necessity and file a tariff.³⁶

In response to the question of federal preemption, the Commission found Vonage to be a “telecommunications service” within the jurisdiction of the NYPSC.³⁷ In contrast to the Minnesota court’s finding that the information transmitted by Vonage is data packets, the NYPSC found it is the *user’s voice* that is transmitted.³⁸ The NYPSC reasoned, because the information transmitted begins and ends as a voice call placed using an analog telephone, there is no *net* change in form or content between the two parties to the telephone call.³⁹ Thus, while the Vonage service undergoes various format conversions while traveling between the callers, ultimately the conversions cancel out.

Vonage sued, asking the court to enjoin the PSC’s order.⁴⁰ On July 16, 2004, a magistrate judge in the Southern District of New York issued a preliminary injunction staying the PSC’s order for six months pending clarification of the underlying issues by the FCC.⁴¹ The Court further ordered the parties to hold a conference on December 13, 2004 to update the court on the status of the FCC’s VoIP rulings. At that time the Court will decide whether to issue a permanent injunction.⁴² Until then, Vonage has agreed to make “reasonable good faith efforts” to participate in industry-wide development of standards for 911 services over VoIP.⁴³

35. *Id.* at 1002-03.

36. *Frontier Tele. of Rochester, Inc. v. Vonage Holdings Corp.*, Case No. 03-C-1285, 18 (N.Y. Pub. Serv. Comm’n, May 21, 2004), *available at* [http://www3.dps.state.ny.us/pscweb/WebFileRoom.nsf/Web/C03561B8303FD80885256E9B004F8806/\\$File/03c1285.pdf?OpenElement](http://www3.dps.state.ny.us/pscweb/WebFileRoom.nsf/Web/C03561B8303FD80885256E9B004F8806/$File/03c1285.pdf?OpenElement).

37. *Id.* at 12.

38. *See id.*

39. *See id.* at 12-13.

40. *See Vonage Holdings Corp. v. New York Pub. Serv. Comm’n*, No. 1:04-cv-04306 (S.D.N.Y. filed June 7, 2004).

41. *See Vonage Holdings Corp. v. New York Pub. Serv. Comm’n*, No. 1:04-cv-04306 (July 16, 2004).

42. *Id.* at 3.

43. *Id.* at 4.

FCC PROCEEDINGS

PSTN-TO-PSTN VOIP

Vonage and similar services allow users with an Internet connection to place and receive calls from PSTN telephones. One end of the call is generally on the Internet; the other end is on a PSTN. But some of the efficiencies of VoIP can be exploited by long-distance carriers providing PSTN-to-PSTN service. Calls are converted to Internet traffic at a gateway local to the calling party and are then converted back to PSTN traffic at a gateway local to the called party. This use of the public Internet for long-distance transport reduces the need for expensive private long-haul data networks.

In addition to the technical efficiencies of using the Internet for PSTN long-distance voice transport, some companies saw potential regulatory efficiencies as well. If the FCC determined the provision of a PSTN-to-PSTN call that traversed the Internet to be an “information service,” they could avoid regulation.

The FCC was presented with this issue when AT&T petitioned the Commission for a declaratory judgment that its PSTN-to-PSTN traffic that traversed the Internet was part of an unregulated “information service” rather than a “telecommunications service.”⁴⁴ For this reason AT&T contended that it should not be assessed access charges.⁴⁵ Access charges are fees paid by long distance carriers to local exchange carriers for connecting calls to or from the local exchange carrier’s customers.⁴⁶

The FCC ruled AT&T’s use of VoIP within its network is the provision of a “telecommunications service,” not an “information service.” The Commission noted that “[e]nd-user customers do not order a different service, pay different rates, or place and receive calls any differently than they do through AT&T’s traditional circuit-switched long distance service.”⁴⁷

44. See Petition for Declaratory Ruling that AT&T’s Phone-to-Phone IP Telephony Services are Exempt from Access Charges, 19 F.C.C.R. 7457 (2004), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-97A1.pdf.

45. See *id.*

46. See 47 C.F.R. § 69 (2004) (detailing the system of access charges for long-distance service).

47. See Petition for Declaratory Ruling that AT&T’s Phone-to-Phone IP Telephony Services are Exempt from Access Charges, 19 F.C.C.R. 7457, 7465

Thus, AT&T's service does not meet the definition of an "information service"⁴⁸ – a service offering a "capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information."⁴⁹ The Commission recognized that some protocol conversions take place in connection with AT&T's service, meaning that analog voice calls are converted to Internet packets and then converted back, but because no *net* change in form or content occurs, AT&T offers a "telecommunications service" and is subject to access charges.⁵⁰

COMPUTER-TO-COMPUTER VOIP

Although most VoIP services offer connections to the PSTN, some services are Internet-only. Skype, for example, is a popular VoIP application whose primary use is free computer-to-computer calling.⁵¹ Free World Dialup (FWD) is a similar free service through which subscribers can use a variety of connection devices, from softphones to hardware IP telephones.⁵²

In February, 2003, pulver.com, the company that offers FWD, petitioned the FCC for a declaratory judgment that FWD was an unregulated "information service," not a regulated "telecommunications service."⁵³ A year later, the Commission agreed by ruling FWD is an unregulable "information service."⁵⁴

VONAGE DECLARATORY RULING

On November 12, 2004, the FCC released its

(April 21, 2004), *available* at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-97A1.pdf.

48. *Id.*

49. *Id.*

50. *Id.* at 7466.

51. *See* <http://www.skype.com/> (last visited Oct. 29, 2004). While the primary use of Skype is free computer-to-computer calling, Skype offers an add-on service, SkypeOut, which allows users to call PSTN numbers for a per-minute fee. *See* <http://www.skype.com/products/skypeout/> (last visited Oct. 29, 2004).

52. *See* <http://www.pulver.com/fwd/> (last visited Oct. 29, 2004).

53. *See* Petition for Declaratory Ruling that pulver.com's Free World Dialup is Neither Telecommunications Nor a Telecommunications Service, 19 F.C.C.R. 3307, 3307-08 (2004), *available* at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-27A1.pdf.

54. *Id.* at 3307.

Memorandum Opinion and Order resolving Vonage Holdings Corporation's petition for a declaratory ruling on whether Minnesota may regulate the Vonage DigitalVoice service.⁵⁵ The Commission ruled that Minnesota's attempt to regulate Vonage was federally preempted.⁵⁶ The holding was limited to the question of jurisdiction.⁵⁷

The ruling explicitly left open a number of questions. First, the Commission did not rule on whether the Vonage service was a "telecommunications service" or an "information service."⁵⁸ Further, the ruling expressed no opinion regarding whether Vonage will be required to comply with federal regulations regarding CALEA, E911, contributions to the Universal Service Fund, intercarrier compensation, and disability access.⁵⁹ The Commission plans to resolve these issues as part of its ongoing IP-Enabled Services proceeding.⁶⁰

As important as the holding was the way the Commission framed the facts. The Minnesota PUC's arguments that Vonage should be regulated like a traditional telephone company relied on the fact that Vonage holds itself out as a telephone company and provides services that closely mimic the experience of using a traditional wireline telephone.⁶¹ However, the Commission described the Vonage service as a suite of integrated communications services which can be invoked either via a VoIP-connected telephone or an Internet-connected computer. The origination and termination of real-time voice traffic, in the Commission's framing, is merely one among many features offered by the Vonage service, not its defining characteristic.⁶² Rather than identifiers of physical telephone lines existing primarily in a single geographical location, the Commission recognizes that telephone numbers assigned by Vonage are merely an "identification mechanism

55. *In re* Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, FCC Case No. 04-267 (November 12, 2004) (Memorandum Opinion and Order) (hereinafter "*MO&O*"), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-267A1.pdf.

56. *Id.* at ¶ 1.

57. *Id.*

58. *Id.* at ¶ 14 n.46.

59. *Id.*

60. *See infra* notes 72 & 74.

61. *See supra* notes 20, 28-29 and accompanying text.

62. *MO&O* at ¶ 8.

for the user's IP address.”⁶³

This recognition that Vonage telephone numbers are “not necessarily tied to the user's physical location for either assignment or use” is central to the Commission's jurisdictional holding.⁶⁴ Not only are Vonage users not required to choose an area code corresponding to their geographical location, but Vonage has no way of knowing the physical location of a user at the time a call is made.⁶⁵ Thus, a call from one number in the 612 area code to another number in the 612 area code might actually be connecting one person in Paris and another person in Moscow, and Vonage couldn't tell the difference.

When “separating a service into interstate and intrastate components is impossible or impractical,” FCC regulations may preempt state regulations.⁶⁶ Traditionally, the Commission has applied an “end-to-end” jurisdictional analysis; if both endpoints of a communication fall within a state, the communication is “intrastate” in nature, even if the call traverses state lines on its path between the two endpoints.⁶⁷ Such an approach is of limited utility when the locations of the endpoints are difficult or impossible to discern.⁶⁸ While the MPUC and other commenters proposed a number of proxies for geographical location, all create a likelihood that states will regulate beyond their borders.⁶⁹ Further, even if Vonage could modify its network to keep track of users' physical locations, the Commission held that the expense and service disruption required to implement such a system is reason enough for federal preemption.⁷⁰

Moving beyond the Vonage service itself, the Commission set out a three-factor test to determine which types of VoIP services may be regulated only by the FCC, not by the states. The three elements of a federally preempted VoIP service are (1) “a requirement for a broadband connection from the user's location”; (2) “a need for IP-compatible [Internet-connected]

63. *Id.* at ¶ 9.

64. *Id.*

65. *Id.* at ¶ 5.

66. *See Louisiana Pub. Serv. Comm'n v. FCC*, 476 U.S. 355, 368-69 (1986).

67. *MO&O* at ¶ 17; *see, e.g., Bell Atl. Tel Cos. v. FCC*, 206 F.3d 1, 3 (D.C. Cir. 2000).

68. *MO&O* at ¶ 24.

69. *Id.* at ¶ 26-29 (rejecting the use of proxies such as the geographical area corresponding to the area code and the billing address of the user).

70. *Id.* at ¶ 29.

CPE [Customer Premises Equipment]”; and (3) “a service offering that includes a suite of intergrated capabilities and features, able to be invoked sequentially or simultaneously, that allows customers to manage personal communications dynamically, including enabling them to originate and receive voice communications and access other features and capabilities, even video.”⁷¹ This test is consistent with the Commission’s recent rulings on VoIP regulation; Free World Dialup is preempted and fits all three criteria, while AT&T’s IP-routed conventional long distance service fits none.

ONGOING PROCEEDINGS

To resolve the questions posed by the Vonage cases described above, the FCC issued a Notice of Proposed Rulemaking seeking comment on the resolution of numerous regulatory issues surrounding VoIP in February 2004.⁷²

In addition, as of this writing, the FCC has issued a Notice of Proposed Rulemaking regarding the applicability of the Communications Assistance for Law Enforcement Act⁷³ (CALEA) to VoIP.⁷⁴ CALEA requires “telecommunications carriers” to provide certain technical facilities to law enforcement to facilitate wiretapping.⁷⁵ The FCC tentatively ruled that all facilities-based providers of broadband Internet access or “managed” VoIP services are “telecommunications carriers” subject to CALEA requirements.⁷⁶ However, this ruling has no bearing on whether the FCC will ultimately determine that VoIP is a “telecommunications service” under the Telecommunications Act, since the Commission found that the CALEA definition of “telecommunications carrier” applies more broadly than the Telecommunications Act definition of “telecommunications service.”⁷⁷

71. *Id.* at 32.

72. *See* IP-Enabled Services, FCC 04-28, Docket No. 04-36 (Feb. 12, 2004) (Notice of Proposed Rulemaking), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-28A1.pdf.

73. *See* 47 U.S.C. § 229, 1001-1010 (2000).

74. *See Communications Assistance for Law Enforcement Act*, 69 Fed. Reg. 56,976 (September 23, 2004) (Notice of Proposed Rulemaking).

75. *See* 47 U.S.C. § 1001(8) (defining “telecommunications carriers”); 47 U.S.C. § 1002 (placing requirements on all “telecommunications carriers”).

76. *See* Communications Assistance for Law Enforcement Act, 69 Fed. Reg. 56,977 (September 23, 2004) (Notice of Proposed Rulemaking).

77. *Id.* at 56,978.

CONCLUSION

Voice over Internet Protocol presents a number of new problems for regulators. As a public utility, it seems to require public-interest regulation that accompanied the rise of other utilities like electricity, telephone, and cable television.⁷⁸ However, because the costs of market entry and exit are low, and consumers have access to a wide range of substitute communication technologies, VoIP defies the traditional regulatory calculus.

Over the next several years, the voice communications industry will likely be transformed by the availability of cheap, ubiquitous VoIP service. As of this writing, it remains to be seen whether regulators will allow the transition to occur untrammelled or whether substantial regulatory controls will be imposed on the nascent industry.

78. See *e.g.*, *United States v. Southwestern Cable Co.*, 392 U.S. 157 (1968); *FCC v. Pottsville Broad. Co.*, 309 U.S. 134 (1940).