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VoIP: THE FUTURE OF TELEPHONY IS NOW... IF REGULATION DOESN'T GET IN THE WAY

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ABSTRACT

VoIP is an innovative new form of telephony that can dramatically enhance both the efficiency and functionality of telephone service to businesses and individuals around the globe. Regulators worldwide are now faced with the choice of whether to impose inapt, antiquated monopoly-based telecom regulations on VoIP or to exercise regulatory restraint and allow this dynamic communications medium to flourish. This article examines some of the technical aspects of VoIP, and considers why this new technology is rapidly gaining popularity in both industrialised and developing nations alike. The article also analyses the changes in the regulatory environment in the United States, including major rulings by the Federal Communications Commission and federal courts that have occurred in the wake of VoIP's rise in popularity and cross-platform acceptance. Finally, the article looks at some of the issues that regulators in other countries, including India, must address as the legal framework relevant to VoIP continues to evolve.

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I. INTRODUCTION

New technologies that use the Internet and Internet Protocol to deliver voice communications are changing the ways people communicate with one another.[1] Some have described Voice over Internet Protocol (VoIP) - the emerging combination of high-speed Internet and new voice applications - as a way to "deliver old services in fundamentally new ways."[2] VoIP is more revolutionary than evolutionary, marking by far the most dramatic change in the technological and conceptual framework of telephony since the development of the hard switch. Its emergence is forcing re-evaluation of the heavily regulated treatment historically accorded to telephone services, and harmonisation with contemporary thought on the deregulated nature of the Internet. Our ability to mesh these communications media and their regulatory constructs will determine whether and when the true potential of VoIP to enhance communications and hasten economic development will be realised to its fullest extent.

II. WHAT IS VOIP?

A. VoIP Defined

Voice over Internet Protocol also is referred to as Internet Protocol (IP) telephony, Internet telephony and Voice-over-the-Internet (VoN).[3] Although there are no universally accepted definitions for any of these terms, a good description is:

> *The technology used to transmit voice conversations over a data network using the Internet Protocol. Such data network may be the Internet or a*

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[1] David Jolly, *Free VoIP: Ears Perk Up*, INT'L HERALD TRIB., Feb. 26, 2005, http://www.iht.com/articles/2005/02/25/business/ptend26.php (last visited Oct. 8, 2005) (predicting that increased use of voice over Internet protocol could result in enhanced family communication and more cost-efficient telecommuting, and characterising VoIP as "technology that could change your life").

[2] VOICE ON THE NET COALITION, UNLEASHING THE PROMISE OF INTERNET VOICE COMMUNICATION 1 (2004), *available at* http://www.von.org/usr_files/Whitepaper%20Final.pdf (last visited Nov. 5, 2005) [hereinafter VoN WHITE PAPER].

[3] GERALD J. WALDRON & RACHEL WELCH, GLOBAL INTERNET POLICY INITIATIVE, VOICE-OVER-IP: THE FUTURE OF COMMUNICATIONS 1 (2002), *available at* http://www.internetpolicy.net/practices/voip.pdf (last visited Nov. 5, 2005) [hereinafter GIPI White Paper].

corporate Intranet, or managed networks typically used by long and local service traditional providers and ISPs that use VoIP.[4]

B. Technology Basics

The core feature of VoIP calling is the conversion of analogue voice signals into individual IP digital packets through special hardware or a computer.[5] The IP packets then are transmitted over data networks, such as a managed IP network or the Internet, via routers. Finally, the IP packets are converted back into analogue voice upon arrival at their destination or, in cases where VoIP service is interconnected with the Public Switched Telephone Network (PSTN), packets sometimes may be converted into analogue on that network.[6]

In a traditional circuit-switched telephone call, each conversation - including numerous moments of bandwidth-consuming silence - utilises a constant, dedicated portion of bandwidth over a unitary path on the telephone network.[7] As more calls are made on the network, the amount of bandwidth available decreases. In the more efficient world of packet networks, packet-switching technology enables multiple conversations that have been converted into IP packets to be transmitted over a shared network.[8] Another benefit of packet-switching is that packets may be re-routed through different channels to circumvent problems such as malfunctioning routers and damaged lines.[9] Also, unlike a traditional telephone call, bandwidth is not monopolised by a single conversation; instead, the conversation, divided into multiple IP packets, is spread over the shared network with greater efficiency. However, because the conversation is transmitted as multiple IP packets, VoIP calls can

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[4] NEWTON'S TELECOM DICTIONARY 870 (19th ed. 2003).

[5] VoN WHITE PAPER, *supra* note 2, at 2.

[6] For example, one way of converting voice signals into IP packets relies on integration of softswitch interfaces at the PSTN. These interfaces digitise and compress the voice signal, attach an IP header, and send the packets over the IP network. A receiving media gateway assembles the packets and converts them back to a voice signal. *See* VERISIGN, IP TELEPHONY WHITE PAPER 2 (2002), *at* http://www.verisign.com/static/001936.pdf (last visited Nov. 5, 2005).

[7] VoN WHITE PAPER, *supra* note 2, at 2.

[8] *Id.*

[9] *Id.* at 4.

experience problems such as end-to-end delay in receiving packets over the network and packet loss across the channel, although technology is rapidly overcoming these drawbacks.[10]

C. The Flavours of VoIP Communications

There are three principal types of VoIP communications: 1) PC-to-PC, 2) Phone-to-Phone-over-IP, and 3) PC-to-Phone or Phone-to-PC.[11] With ***PC-to-PC*** (or end-to-end IP) communications (e.g. pulver.com), both the calling and the called parties must have computers or other devices capable of executing VoIP application software commands, such as PDAs, and both must be connected to the Internet at the same time via their respective Internet Service Providers over dial-up, DSL or high-bandwidth Internet connections or via a private network.[12] Moreover, the calling party must know the IP address of the party he or she is calling.[13] In this scenario, the ISP is a passive participant, merely enabling the user to access the Internet; there is no third-party voice service, in the sense of traditional telephony, but rather the parties connect to each other directly through their PCs using a voice-based Internet application.

In a ***Phone-to-Phone-over-IP*** call (e.g. Net2Phone), the communicating parties, both of whom subscribe to PSTN services (fixed or wireline), do not use PCs but instead utilise their own traditional telephone sets in the normal manner.[14] There are two ways that a Phone-to-Phone-over-IP call can occur. One method is through the use of a gateway.[15] Here, the calling party initiates a call in a traditional manner, but the call is then routed through a gateway

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[10] For a discussion of these and other packet-related problems, see NORTEL NETWORKS, VOICE OVER PACKET: AN ASSESSMENT OF VOICE PERFORMANCE ON PACKET NETWORKS (2001), *at* http://www.nortel.com/solutions/providers/enabling_tech/voip/voip101.html (last visited Nov. 5, 2005).

[11] GROUP OF EXPERTS ON IP TELEPHONY & INTERNATIONAL TELE-COMMUNICATIONS UNION, THE ESSENTIAL REPORT ON IP TELEPHONY 4 (2003), *at* http://www.itu.int/ITU-D/e-strategy/publications-articles/pdf/IP-tel_report.pdf (last visited Nov. 5, 2005).

[12] *Id.* at 4-5.

[13] *Id.* In some applications, the parties may use an online directory server where users register prior to initiating calls.

[14] *Id.* at 6.

[15] *Id.*

that enables the call to be transmitted over a managed IP network (as opposed to the public Internet). The call is converted again by the destination gateway and is relayed via a fixed or wireless network to the called party's telephone set. The gateways and the managed IP network may be owned by the same party, or by different parties. The VoIP aspect of the call is effectively invisible to the communicating parties.[16]

The second method is through the use of adaptors, which resemble modems. In this situation, the calling party initiates the call using a traditional telephone set connected to the adaptor. The adaptor sends the call to the PSTN, but the call is then routed via the parties' respective ISPs to and from the Internet. The called party's local exchange carrier receives the call from the Internet and relays it to the called party's adaptor, which sends the call to the called party's telephone set connected to this adaptor. Unlike a gateway, the adaptor method is similar to a PC-to-PC call in that both parties must subscribe to ISPs whose access software has been installed in the subscribers' respective adaptors. In addition, both parties must use the same type of adaptor.[17]

A ***Phone-to-PC or PC-to-Phone*** communication (e.g. Vonage and Ping-Phone) is like a combination of a PC-to-PC call and a Phone-to-Phone-over-IP call.[18] If the calling party initiates a call from a computerised device, the call is connected via an ISP to the Internet, just like the initiation of a PC-to-PC call. However, an Internet telephony service provider (ITSP) receives the call and, using a gateway, directs the call (either over a managed network or other Internet connection) to the point of the PSTN closest to the called party's telephone exchange and interconnects the call with the called party's telephone carrier, which then connects the call to the called party's traditional telephone set. When the calling party uses a traditional telephone set, the process works essentially in reverse.

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[16] A 'managed IP network', unlike the public Internet, is a privately owned network constructed in such a way as to provide voice over IP with an acceptable and predictable quality of service. *Id.*

[17] *Id.*

[18] *Id.* at 7-8.

III. WHY DO WE CARE ABOUT VOIP?

A. VoIP is Much Less Expensive for Routing of Traffic

VoIP is an extraordinarily efficient means of transmitting voice communications. Depending on the technology used, VoIP may use a mere one-tenth of the bandwidth required for traditional telephone voice conversations.[19] This efficiency significantly reduces the infrastructure investment necessary to carry a particular quantum of voice traffic.[20] Moreover, when interconnecting with the traditional telephone network, VoIP providers generally do not pay the high fees that telephone companies pay to transport one another's traffic ('access charges'), although that has been a source of controversy.[21] These fees amount to many billions of US dollars worldwide.[22]

Because fees paid on international traffic are much higher than domestic fees, VoIP for international calling leads to even greater savings for consumers. VoIP began in the mid-'90s, as general public awareness and usage of the Internet increased, principally as computer-to-computer international calling over the Internet in order to avoid the high fees that traditional telephone companies had to pay one another and passed on to consumers. The US Federal Communications Commission (FCC) continues to encourage (or at least not interfere with) VoIP usage as a moderating force against the very high international settlement rates (the international equivalent of access charges) charged by foreign governments for completing international long-distance calls over the PSTN, compared to termination rates in the United States.

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[19] Applied Research Technologies, *Packet Voice Technology: Cheap Talk?*, May 13, 1999, *at* http://www.applied-research.com/applied-research/articles/99/article10Sanford.htm (last visited Oct. 5, 2005); Silicon Press, *Technology Brief: VoIP - Voice Over IP, at* http://www.silicon-press.com/briefs/brief.voip/index.html (last visited Oct. 22, 2005).

[20] *See* VoN WHITE PAPER, *supra* note 2, at 5. VoIP networks are based primarily on software, in contrast to traditional circuit-switched networks, which are hardware-dependent. Software-based networks are less costly to build and easier to modify and maintain. Some estimate that packet-switched networks can save 50 to 60 percent in operating costs. *Id.*

[21] *See* discussion *infra* Parts IV(C), V(A)(2), V(A)(3).

[22] According to a study prepared in 1999 by the ITU and TeleGeography, more than US$50 billion was transferred during the 1990s from developed countries to developing countries pursuant to the international accounting rate system. *See To Regulate or Not to Regulate?*, ITU NEWS (International Telecommunications Union, Geneva), Jan. 2005, at 8, *available at* http://www.itu.int/ITU-D/treg/VoIP.pdf (last visited Nov. 2, 2005) [hereinafter ITU News].

B. VoIP has Greater Efficiency and Increased Functionality

VoIP can generally be run over existing data networks with some modifications.[23] Only one network is needed to provide voice and data services and both voice and data functions can be integrated. Maintenance is also easier. For example, moving, adding or changing employee telephone numbers was found in one survey to be reduced from one to two hours of work to fifteen minutes even if traditional telephone handsets were used and, if special IP phones were used, the time was reduced to near zero because users could plug in anywhere and no reconfiguration was needed.[24]

The first PC-to-phone service was commercially launched by Net2Phone in 1996. Although initially VoIP suffered from poor voice quality and complex set-up requirements, those problems have now largely been eliminated.[25] Today, VoIP enjoys improved voice quality that rivals the PSTN (particularly when provided over private networks as opposed to the public Internet), interconnection with the traditional telephone network for many providers, increased penetration of broadband Internet connections (most VoIP services require high-speed connections), and greatly enhanced functionality that can far exceed that which is available on the PSTN.

VoIP is not just another flavour of telephone service but is rather a way to provide new, innovative and more affordable services.[26] Although its main

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[23] *See* VoN WHITE PAPER, *supra* note 2, at 4 (distinguishing VoIP from the PSTN, which requires new service providers either to build their own infrastructure or to lease the infrastructure from an incumbent provider).

[24] Robin Gareiss, *VoIP by the Numbers*, NETWORK WORLD, Nov. 3, 2003, *at* http://www.networkworld.com/research/2003/1103voip.html (last visited Oct. 15, 2005).

[25] New technologies that improve the quality of VoIP continue to emerge. For example, at a recent conference in Washington, D.C., satellite broadband solutions provider Tachyon Networks, Inc. announced that it had developed a new service that prioritises voice packets over data during transmission. The company claims that its service results in a reduction in packet loss and thereby provides higher-quality, more efficient VoIP connections. *See* Matthew Friedman, *Tachyon Rolls out Expanded Satellite VoIP Service*, NETWORKING PIPELINE, Mar. 23, 2005, *at* http://www.networkingpipeline.com/news/159904770 (last visited Nov. 2, 2005).

[26] VoN WHITE PAPER, *supra* note 2, at 3 (noting that the traditional PSTN "operates as a closed system on which it is impossible for innovative developers to build new applications," unlike VoIP, which is deployed on the Internet and offers new capabilities such as access to voicemail from e-mail, low-cost conference calling and the capacity to use a phone extension anywhere an Internet connection is found).

application initially was in long-distance calls, especially international calls, it is increasingly being used to deliver local or intrastate services, to avoid high access and termination charges and to make available enhanced functionality and efficiency not feasible over traditional telephone networks.

C. VoIP Matters to Incumbents, Competitors and Consumers

Voice communications in the United States, as elsewhere, is a gigantic business, worth approximately $200 billion annually.[27] As in other parts of the world, telephone communications in the United States have traditionally been monopolised. Long-distance competition emerged in the 1960s and took off in the '80s. Local competition, which first appeared in the 1980s and was supposed to have been jump-started with the enactment of the 1996 Telecom Act, is still anaemic, except for that provided by wireless services.

The distinction between *toll* (long-distance) and *local* calling has virtually disappeared. Historically, there were valid technical and economic differences between toll and local calling, but they have been reduced, if not eliminated, by fibre optics, substantially less expensive switches and a glut of capacity. Today, the toll-versus-local distinction is essentially a retail-pricing artefact.

Incumbents have fought to preserve the toll-versus-local distinction in order to continue to exploit their monopoly over access to their end users by imposing high access charges on toll carriers. But that exploitation has invited competition from wireless (which largely disregards the toll-versus-local distinction) and VoIP long-distance (which can connect stealthily, behind a competitive local exchange carrier (CLEC) or plain old telephone service (POTS) line) providers.

As wireless telephone service rapidly erodes the incumbent wireline POTS base, VoIP services are making substantial inroads into both long-distance and local carriers' markets. 'VoIP over WiFi' is already being rolled out, and IP 'smart phones' have been designed to work over wireless LANs (i.e. WiFi systems). The 'next-generation network' will integrate VoIP with the PSTN, Internet and wireless to create the 'killer application'.[28]

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[27] Steve Taylor & Larry Hettick, *Convergence Coming from Cable Companies*, NETWORK WORLD, Jul. 7, 2004, *at* http://www.networkworld.com/newsletters/converg/2004/0705converge2.html (last visited Oct. 17, 2005).

[28] *See* P.J. Louis, *VoIP: The Killer Application*, *at* http://www.mobilein.com/Perspectives/Authors/VoIP-1.htm (last visited Oct. 17, 2005).

D. The Incumbents' Dilemma

Previously, VoIP was largely invisible to end users, as carriers cautiously applied the technology inside their networks to gain the efficiencies of packet-switched transport, as opposed to circuit-switched transport. Now, VoIP has emerged onto the desktop and is profoundly changing customers' experience both in the cost and the functionality of telephone communications.

Many incumbent local phone companies ('ILECs', or 'incumbent local exchange carriers') have been reluctant to promote VoIP, because doing so would undercut prices for their traditional voice services. Even when they have done so, they have often required customers to keep their traditional telephone lines, marketing VoIP service as a second-line replacement.

Incumbents rightfully fear the impact of VoIP. For example, in March 2004, Standard & Poor's put Verizon Communications' long-term credit ratings on review for a possible downgrade, citing the burgeoning ability of cable companies to offer Internet-based phone service as a 'substantial' new industry threat. The dilemma for all incumbent providers of traditional telephone services is no longer whether, but rather when and how, to offer VoIP to consumers. A related issue for all VoIP providers will be whether to offer higher quality, more expensive VoIP over 'managed' IP networks or lower quality, less expensive VoIP over the public Internet.

ILECs, seeking to hold onto their monopoly-sown customer base, have resisted the onslaught of VoIP in a number of ways. For example, initially they refused to allow defecting telephone customers to take their telephone numbers with them ('number portability'), hoping that customers' unwillingness to abandon their numbers would stem the tide of defections to VoIP. Incumbents also have sought to discourage customers from dropping their POTS in favour of a competing VoIP service by tying a customer's right to continue subscribing to the incumbent's DSL Internet access service to retaining mandatory PSTN telephone service (bundling), a tactic that has led competitors (such as cable television operators) and consumer advocates (including state attorneys general) to insist that incumbents offer 'naked DSL', i.e. DSL free of any requirement that a subscriber take the incumbent's telephone service as well.

E. VoIP Growth is About to Explode

As VoIP technology has improved, feature-richness has increased, service issues have been resolved, the number of VoIP providers has risen, the retail

price of the service has fallen and consumers have embraced VoIP in rapidly increasing numbers. Some residential users have subscribed to VoIP as a second line, while others have replaced their traditional landline service completely. Businesses too have begun enthusiastically migrating to VoIP in truly impressive numbers. For example:

- Vonage announced that its customer base grew from about 100,000 lines at the end of 2003 to nearly 400,000 lines at the end of 2004.[29] It predicts that this will grow to one million customers by the end of 2005.[30]
- There were more than 600,000 subscribers to VoIP services in the United States by the end of 2004, up from about 130,000 in 2003.[31] That number is predicted to grow to 12.1 million by 2009.[32]

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[29] *See* Press Release, Vonage, Vonage Crosses 400,000 Line Mark (Jan. 5, 2005), http://www.vonage.com/corporate/press_index.php?PR=2005_01_05_0 (last visited Oct. 7, 2005) (claiming that Vonage ended 2004 with more than 390,000 subscribers, thereby nearly doubling its subscriber base in less than six months and representing an increase of approximately 300,000 lines for the year).

[30] *See* Ben Charny, *Vonage Seeks a Million Users by '06*, CNET NEWS, Mar. 7, 2005, *at* http://news.com.com/Vonage+seeks+a+million+users+by+06/2100-7352_3-5603040.html (last visited Oct. 17, 2005) (quoting Vonage CEO Jeffrey Citron in his belief that the company will have a million subscribers by the end of 2005). Vonage appears to be well on its way to meeting this goal. As of early March 2005, the company reported that it already had over 500,000 lines in service and was adding new lines at the rate of 15,000 per week. Colin Haley, *Vonage's Hits and Misses*, INTERNETNEWS.COM, Mar. 7, 2005, *at* http://www.internetnews.com/infra/article.php/3487886 (last visited Oct. 17, 2005) (noting also that, despite impressive growth, Vonage has not been immune to problems, including a software glitch this year that knocked out service to half of its subscribers).

[31] *Vonage Dodges State Regulations*, WIRED NEWS, Nov. 9, 2004, *at* http://www.wired.com/news/ebiz/0,1272,65655,00.html (last visited Oct. 17, 2005) (citing statistics provided by The Yankee Group, a Boston-based communications research firm).

[32] Michael Singer, *VoIP to Fuel Plague of 'Dialing for Dollars'*, INTERNETNEWS.COM, Mar. 11, 2005, *at* http://www.internetnews.com/xSP/article.php/3489591 (last visited Oct. 17, 2005) (citing a report by Jupiter Research and adding that VoIP is expected to become even more popular outside of the United States).

- US carriers spent approximately $3 billion on VoIP equipment in 2004, a figure that is expected to rise to $4.42 billion for 2005.[33] It is forecasted that such expenditures will approach $11 billion per year in 2009.[34]
- The number of Internet-based phone lines in the US grew from well under one million in 2002 to approximately five million by the end of 2004.[35]
- VoIP service revenue in North America crossed $1.3 billion in 2004 and is predicted to grow to $19.9 billion in 2009.[36]
- More than 12% of all US businesses used VoIP services in 2004, up from just 3% in 2003.[37] The number of US businesses using VoIP is expected to triple in 2005, accounting for more than 30% of voice lines in the enterprise market.[38]

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[33] *Internet Phones Likely to See Price Competition*, BIZREPORT, Mar. 24, 2005, *at* http://www.bizreport.com/news/8787/ (last visited Oct. 17, 2005) (pointing out that the market for VoIP equipment, which includes phones, hardware and software, jumped 78% in 2004).

[34] *Id.*

[35] Peter Burrows, *Net Phones Start Ringing Up Customers*, BUSINESSWEEK ONLINE, Dec. 29, 2003, *at* http://www.businessweek.com/@@kVQLHIYQciY5FRoA/magazine/content/03_52/b3864039.htm (last visited Oct. 17, 2005) (citing a report by Adventis Corp. and noting that the growth in VoIP is attributed to affordable broadband and VoIP lines that can be established for ten to twenty percent of the cost of deploying a regular phone line).

[36] *See* Press Release, Infonetics Research, Inc., VoIP Service Revenue Tops $1.3B in 2004, Skyrockets to $20B in 2009 (May 5, 2005), *available at* http://www.infonetics.com/resources/purple.shtml?ms05.vip.nr.shtml (last visited Oct. 17, 2005) (announcing the findings of Infonetics Research's latest report on VoIP services, which predicts a 1,431% increase in VoIP service revenue between 2004 and 2009).

[37] *Corporate VoIP Diffusion Rate up to 12 Percent in 2004*, GLOBAL SOURCES, Dec. 22, 2004, *at* http://www.globalsources.com/gsol/I/Internet-telephone/a/9000000059002.htm (last visited Nov. 2, 2005).

[38] *IP Telephony Adoption to Triple in 2005*, NEW TELEPHONY, Mar. 14, 2005, at 10, *at* http://www.nxtbook.com/fx/books/virgo/newtelephony-mar14-05/ (last visited Oct. 17, 2005) (referring to a study conducted by In-Stat in which even companies with fewer than 100 employees expressed interest in adopting VoIP technology).

- Worldwide, the numbers have grown even larger. Skype Technologies[39] announced that its premium paid service, SkypeOut, which allows users to connect to a PSTN number anywhere in the world,[40] passed the one-million-user threshold in March 2005.[41] Overall, Skype has more than 29 million registered users, most of whom use the company's free peer-to-peer Internet phone service.[42]
- Worldwide, it is predicted that 40% of all businesses will use VoIP by 2009.[43]

IP telephony's enhanced efficiency and functionality and its broad applicability to both commercial and residential uses and its rapid adoption worldwide have made it a force to be reckoned with. However, although the popularity of Internet telephony continues to grow at a staggering pace, not everyone views it from the same perspective.

IV. THE PROS AND CONS OF VOIP

A. Arguments Against VoIP

The most vocal opponents of VoIP have been incumbent monopoly local telephone companies. Facing the inevitable extinction of their increasingly archaic traditional switched network infrastructure and erosion of their local monopolies, ILECs have asserted before regulatory authorities not that VoIP should be forbidden, but rather that it should be saddled with a number of regulatory requirements that would slow the roll-out of VoIP services and

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[39] Skype, a global communications company based on peer-to-peer technology, was founded in 2003 by Niklas Zennström of Sweden and Janus Friis of Denmark. *Skype Founders, at* http://www.skype.com/company/founders.html (last visited Oct. 17, 2005).

[40] *Id.*

[41] *Skype Signs One Millionth Paid VoIP User,* ADVANCED IP PIPELINE, Mar. 11, 2005, *at* http://www.advancedippipeline.com/159401456 (last visited Oct. 18, 2005).

[42] *See id.* (noting also that Skype's CEO and co-founder reports that the company is registering approximately 155,000 new users a day).

[43] *Internet Travel Monitor - Research & Legislation Alert: Businesses Ask VoIP to Hold Their Calls,* Jan. 27, 2005, *at* http://www.tripinfo.com/ITM/Articles2005/ITM854.html (last visited Nov. 1, 2005).

reduce the efficiency, efficacy and retail cost-effectiveness of the developing technology. In advancing this regulatory agenda, ILECs have argued that:

- VoIP harms incumbent telephone companies because it bypasses their services and undermines their revenue base.
- VoIP providers, for the most part, do not pay the fees that are used to support universal service/access.
- Many VoIP services do not currently support emergency ('E-911') services.
- VoIP is inferior in quality to traditional telephone services.
- VoIP widens the digital divide.

ILECs are not the only ones who have taken VoIP to task. In a recent case in Texas, the State Attorney General sued Vonage Holdings Corporation, a leading provider of VoIP services in the United States, after two residential subscribers of Vonage's VoIP service were shot during an attempted burglary of their home.[44] When the victims' daughter attempted to dial 911 for help over the family's Vonage connection, she was informed that emergency access was not available from that line.[45] The lawsuit is based on Vonage's alleged

[44] *See* Ted Hearn, *Texas AG Sues Vonage Over 911*, MULTICHANNEL NEWS, Mar. 22, 2005, *at* http://www.multichannel.com/article/CA512263?display=Search+Results%20&%20text=Texas+AG+Sues+Vonage+Over+911 (last visited Oct. 18, 2005) (quoting the Texas Attorney General that the victims' failure to obtain 911 access through their home telephone "is not just about bad customer service - it's a matter of life and death"). Other States also recently have set their sights on VoIP. In Michigan, the Attorney General issued a "consumer alert" warning residents that VoIP is not capable of offering the same emergency 911 services as traditional landline telephone services. *See Michigan Attorney General Raises VoIP 911 Alarm*, VOIP NEWS, Apr. 16, 2005, *at* http://www.voip-news.com/art/71.html (last visited Oct. 15, 2005). In Connecticut, the Attorney General filed a lawsuit similar to that brought in Texas, alleging that Vonage misled consumers in Connecticut regarding the company's emergency dialling services. *See Connecticut Sues Vonage over 911 Policy*, REUTERS, May 4, 2005, *at* http://www.reuters.com/NewsArticle.jhtml? type=Internet News&storyID=8387447 (last visited Oct. 2, 2005).

[45] *See* News Release, Attorney General of Texas Greg Abbott, Texas Attorney General Abbott Takes Legal Action to Protect Internet Phone Customers (Mar. 22, 2005), *at* http://www.oag.state.tx.us/oagnews/release.php?id=850&PHPSESSID=v1rbktaf4pp4rphg28e2v45pd4 (last visited Oct. 17, 2005) (explaining that Vonage customers must take proactive steps to activate the company's 911 dialling feature, and even then the service may not be as reliable as the emergency service offered by traditional phone carriers because calls are routed through administrative lines, instead of directly to call-station operators responsible for dispatching emergency vehicles).

failure to clearly disclose to its customers the lack of traditional E-911 emergency access.[46] According to the complaint, which was filed under the Texas Deceptive Trade Practices Consumer Act (DTPA)[47], Vonage markets its VoIP services as a replacement for traditional telephone service without clearly distinguishing the differences between traditional E-911 services and the emergency calling feature offered with VoIP.[48] The State of Texas is seeking injunctive relief and civil penalties amounting to $20,000 per violation for five alleged violations of the DTPA, as well as costs and attorney's fees.[49]

B. Responses

In response, VoIP proponents have emphasised the technological efficacy and cost-effectiveness of Internet telephony, the ability of the medium to provide competition to incumbent monopolies, and the benefit that VoIP would bring to business and residential consumers through lower-cost and more feature-rich telephone service. For example, they have asserted:

- Protecting incumbent telephone operators' monopolies retards economic and technological development.
- Ultimately, the questions of which services to 'tax' and which services to support financially are political and economic questions, separate from whether VoIP should be freely permitted.
- Some Internet-based VoIP providers furnish varying ranges of emergency services, and will do so increasingly as consumers demand further technical advances. Consumers should be the ultimate judges of what constitutes acceptable quality at what price.
- VoIP technology will reduce the digital divide by lowering long-distance and international calling charges (either to individual homes or public telecentres), making those services available to people who currently cannot afford them.

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[46] *Id.*

[47] TEX. BUS. & COM. CODE § 17.47 (Veron 2002 & Supp. 2005).

[48] *See* Texas v. Vonage Holdings Corp., Cause GV500567, Plaintiff's Original Petition (filed Mar. 22, 2005), *available at* http://www.oag.state.tx.us/newspubs/releases/2005/032205vonagepop.pdf.

[49] *Id.*

While the debate regarding VoIP certainly will continue, in the future it will focus not on whether there should be Internet telephony, but rather on the rules that should govern its growth and development. As is often the case, uncertainty could do almost as much harm as the adoption of rules that directly restrict IP telephony's deployment and permitted scope of use. In that setting, it is particularly important that policymakers and regulators around the world act promptly to remove barriers and resist the temptation to impose burdensome requirements that could stunt the growth of this dynamic new medium of communications.

V. VOIP IN THE USA: SHOULD VOIP BE REGULATED AND, IF SO, HOW?

At the beginning of 2004, the legal and regulatory status of VoIP in the United States was entirely uncertain.[50] Although several rulings have since been issued by US agencies and courts that begin to address the regulatory classification of VoIP, many important legal issues and the practical matters that they will control remain unresolved.

A. US Deregulatory Policy Regarding the Internet

The roots of the debate over the regulatory status of VoIP go back to the earliest days of the Internet. A quarter of a century ago, the US Federal Communications Commission made the policy decision that information services, the precursor of today's Internet, should not be subjected to the traditional regulation that had been applied broadly to telecommunications services in the United States, many of which were monopoly-based.[51] That approach was embraced by the US Congress in the Telecommunications Act of 1996,[52] where Congress expressed its unambiguous preference for a national policy "to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, *unfettered by Federal or State regulation.*"[53] (emphasis supplied)

[50] *See* Burt Braverman, *Voice Over Internet Protocol: Will Legal Uncertainty Shackle a Promising New Technology?, at* http://www.crblaw.com/news/BBraverman_VoIP_Presentation.ppt.

[51] *See generally* In the Matter of Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry), Docket No. 20828, 77 F.C.C.2d 384 (May 2, 1980).

[52] 110 Stat. 56 (1996) (current version at 47 U.S.C. § 151 (1996)).

[53] 47 U.S.C. § 230 (b)(3) (1996).

This policy determination recognises that Internet-based services exist in a dynamic, rapidly changing environment that is ill-suited to the century-old model of telephone regulation. In the words of the FCC's recently retired Chairman, Michael Powell:

> *Competitive market forces, rather than prescriptive rules, will respond to public need much more quickly and more effectively than even the best intentioned responses of government regulators. Indeed, our best hope for continuing the investment, innovation, choice and competition that characterises Internet services today lies in* ***limiting to a minimum the labyrinth of regulations and fees that apply to the Internet.***[54] (emphasis supplied)

B. The US Legal Framework Relevant to VoIP

In the United States, 'telecommunications services' (traditional voice telephony) are regulated at two levels. Long-distance and international services are regulated by the *federal* (US national) government, while local services are regulated by the *states*. Regulations imposed on providers of telecommunications services require them, among other things, to make payments to 'universal services funds'. These funds are designed to ensure that telephone facilities and services are made available to all persons and all areas, including low-income groups and geographical areas where it otherwise might be uneconomical to build telephone facilities and provide telephone services. Telecommunications services providers are also required to install equipment and technology to support emergency telephone services and to ensure that the hearing-impaired and other disabled persons have access to telephone services.

In contrast to telecommunications services, 'information services' (Internet, computer services, voicemail, etc.) are unregulated. Providers of information services generally are not required to comply with regulations relating to universal service, E-911, and provision of services to the disabled.

C. The Issues

The expanding use of VoIP inevitably raises both theoretical and practical issues. From a theoretical standpoint, the issue is whether to extend legacy

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[54] Separate Statement of (Former) Chairman Michael K. Powell, *In the Matter of IP-Enabled Services, Notice of Proposed Rulemaking*, WC Docket No. 04-36, 19 FCC Rcd 4863 (rel. March 10, 2004), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-243868A2.doc.

regulation to Internet telephony and, if not, then how (if at all) to regulate IP telephony. In other words, what regulatory classification should be given to VoIP? Is VoIP an 'information service', and thus unregulated or a 'telecommunications service', and therefore regulated for federal regulatory purposes - or does neither regulatory classification neatly apply?[55]

The different types of VoIP noted above should, and likely will, be judged separately for regulatory purposes. Those with a look and feel most like traditional phone offerings are more likely to be found to be telecommunications services and therefore subjected to telephone-like regulatory burdens, while others will not. For example, AT&T sought exemption from telecommunications access charges based on the argument that it used the Internet for a portion of the transmission of its long-distance traffic. However, the FCC rejected its request, finding that AT&T's service looked and felt to the consumer like a traditional phone service.[56] In contrast, pulver.com and Vonage, whose services have characteristics that distinguish them from POTS both technologically and in the eyes of consumers, have largely beaten back attempts to impose telecommunications regulation on their VoIP services.[57]

However, VoIP providers may be cursed by their own success. The pressure to classify VoIP services as telecommunications services will grow in proportion to the acceptance that such services achieve in the marketplace as a replacement for traditional POTS.

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[55] 47 U.S.C. § 153(20) (1996) states that the term "information service" means the "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." In comparison, 47 U.S.C. § 153(46) (1996) defines a "telecommunications service" 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." "Telecommunications", in turn, is defined in 47 U.S.C. § 153(43) (1996) as "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."

[56] *See* discussion *infra* section V(A)(3).

[57] *See* discussion *infra* sections V(A)(1) and V(A)(5).

In the coming year, regulators in the United States, like their counterparts worldwide, will need to grapple with a number of challenging issues: If VoIP is not regulated like POTS, how will important programs such as E-911 services, universal service and services for the hearing impaired and disabled be funded? What are the competitive consequences of allowing VoIP providers to be free from most federal and state regulation while providers of POTS remain subject to such regulation? Is this the beginning of the end for traditional telephone regulation as we have known it for the past century - and would that be a bad thing? Is it unnecessary and unwise to regulate this competitive nascent service and would such regulation retard innovation and development? These issues dominate the VoIP debate in the United States and transcend the dialogue in all countries over the regulatory classification of Internet telephony.

D. The Battle between the States and the FCC

Generally speaking, the FCC has jurisdiction over interstate services and the states have jurisdiction over intrastate services. Initial VoIP applications involved long-distance and international calling, making the FCC the lead agency. But increasingly, as quality has improved and more people have adopted VoIP as their primary telephone service, it looks much more like local service and now plainly entails significant intrastate calling as a PSTN-substitute service, giving states more ammunition for their case for the assertion of regulatory authority. Likewise, as high intrastate access charges, especially by small ILECs, have led VoIP providers to offer intrastate calling, the issue increasingly has come to the attention of state regulators.

Responding to these developments, a number of states and cities have attempted to regulate VoIP. The telecommunications regulatory authorities in several states (such as Minnesota,[58] New York[59] and

[58] *In the Matter of the Complaint of the Minnesota Department of Commerce Against Vonage Holding Corp. Regarding Lack of Authority to Operate in Minnesota*, 2003 Min. PUC LEXIS 94, at *16 (2003) (finding that Vonage offers two-way communication that is functionally no different from any other telephone service, and that Vonage therefore falls within the meaning of telephone service as defined by Minnesota statute and is subject to regulation by the Minnesota PUC); Vonage Holdings Corp. v. Minn. Pub. Utils. Comm'n, 290 F. Supp. 2d 993 (D. Minn. Oct. 16, 2003) (enjoining enforcement of the Minnesota Public Utilities Commission's order that required Vonage to comply with Minnesota laws regulating telephone companies), *aff'd* 394 F.3d 568 (8th Cir. 2004).

[59] *Complaint of Frontier Telephone of Rochester, Inc. Against Vonage Holdings Corporation Concerning Provision of Local Exchange and InterExchange Telephone Service in New York State in*

Washington[60]) have ruled that VoIP is subject to state regulation by public utility commissions, including requirements that the companies seek permission to provide service, file rate tariffs, be subject to some form of rate regulation, and contribute to universal service and E-911 subsidy funds. Some cities, such as Portland, Oregon, have attempted to impose taxes on VoIP revenues.[61]

In the midst of the states' rush to regulate VoIP, the FCC issued several rulings in 2004 that began to assert federal jurisdiction in a manner and to an extent that will leave states only a limited role in regulating VoIP services. Federal courts have also issued several rulings generally supportive of federal jurisdiction.[62]

VI. 2004: THE DAWN OF REGULATORY CERTAINTY IN THE USA

In 2004, and most recently in June 2005, the Federal Communications Commission and federal courts issued several significant rulings in the United States. These rulings are the first important steps in answering the fundamental jurisdictional questions that will determine whether VoIP in the US will be allowed to flourish in a lightly regulated environment or it will be subjected to more pervasive federal and state regulation that could threaten the pace and scope of innovation and investment in this dynamic medium.

Violation of the Public Service Law, 2004 N.Y. PUC LEXIS 194, at *2 (2004) (finding that Vonage, in offering and providing its service in New York, is a telephone corporation "as defined in the PSL [Public Service Law] and is, therefore, subject to basic statutory requirements"). *See also* Vonage Holdings Corp. v. New York Pub. Serv. Comm'n, 04 Civ. 4306 (S.D.N.Y. July 16, 2004) (order enjoining the New York Public Service Commission from regulating Vonage's services until the FCC resolves issues relevant to the merits of the case).

[60] *In the Matter of the Petition of The Washington Exchange Carrier Association For Order Requiring WebTel Wireless, Inc. to Register as a Telecommunications Company or Cease and Desist Doing Business as a Telecommunications Company*, 2004 Wash. UTC LEXIS 718, at *3 (2004) (determining that "WebTel is a telecommunications company doing business in Washington and is subject to our jurisdiction").

[61] In Portland, the city is proposing a gross receipts tax of five percent on all telecom services, regardless of the technology employed in the provision of such services. The new tax would cover conventional landline telephone service, VoIP, wireless and cable telephony. *See State Telecom Activities*, COMMUNICATIONS DAILY, Jul. 8, 2005, at 5 (adding that the city council is scheduled to consider the proposal in late 2005).

[62] *See* discussion *infra* section V.

A. FCC Actions

1. Order Granting Declaratory Petition of pulver.com

In February 2004, the FCC issued an order declaring that pulver.com's free computer-to-computer FWD (Free World Dialup) service is an unregulated, jurisdictionally interstate information service.[63] The ruling was based on a precise technical analysis of how FWD works.[64] Specifically, FWD offers membership in a directory look-up service that permits members to determine which other FWD users are online.[65] Without providing transmission functionality to members, FWD enables members to make calls to other members who are online and thereby to engage in peer-to-peer communication similar to instant messaging and e-mail by means of a separately obtained broadband connection and also with specialised hardware and/or software.[66] Calls are routed via special numbers rather than traditional ten-digit phone numbers, and members use their PCs rather than traditional phone sets.[67]

Given this unique protocol, the FCC concluded that FWD is not telecommunications as defined by the Telecommunications Act, because pulver.com does not provide transmission functionality to its members;[68] instead, it uses transmission independently provided by others.[69] It provides information - addressing information regarding which other members are online.[70] The FCC also determined that FWD is not a telecommunications service as defined by the Act.[71] In order to be a telecommunications service,

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[63] Petition for Declaratory Ruling That pulver.com's Free World Dialup is Neither Telecommunications Nor a Telecommunications Service, Memorandum Opinion and Order, WC Docket No. 03-45, 19 FCC Rcd 3307, ¶ 1 (rel. February 19, 2004) [hereinafter Pulver Declaratory Ruling].

[64] *Id.* at 3309-11, ¶ 4-7.

[65] *Id.* at 3310, ¶ 6.

[66] *Id.* at 3309-10, ¶ 5.

[67] *Id.*

[68] *Id.* at 3312, ¶ 9.

[69] *Id.*

[70] *Id.*

[71] *Id.* at 3312, ¶ 10.

the service must, at a minimum, be offered for a fee. As the FCC noted, FWD is free.[72]

Instead, the FCC held that FWD is an information service as defined by the Act.[73] The addressing information that identifies who actually is online and available for peer-to-peer communication is new information, not merely information embodied in a existing communications network.[74] The FCC held that it alone occupies this field[75] and that states may not impose economic regulation (such as price regulation, entry/exit regulation, tariff requirements or minimum service standards) on FWD.[76]

Two aspects of the FCC's discussion were suggestive of how it might approach future VoIP-related issues. First, the FCC relied heavily on the fact that the pulver.com service works by means of IP addresses, which do not contain meaningful information about the *physical location* of the parties communicating.[77] Because it is impossible to tell where either party to the communication might be,[78] the FCC's traditional 'end-to-end' test cannot be used to determine whether a normal circuit-switched telephonic communication is intrastate or interstate.[79] Relying on the fact that pulver.com's subscribers are located all over the country and the world, the FCC concluded that the service necessarily included a significant amount of *interstate communication.*[80] This rationale for *exclusive federal jurisdiction* would

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[72] *Id.* at 3312-13, ¶ 10.

[73] *Id.* at 3313, ¶ 11-14.

[74] *Id.* at 3312, ¶ 9 (citing 47 U.S.C. § 153(43) and noting that the information that FWD provides is not "information of the user's choosing, without change in the form or content of the information as sent and received").

[75] *Id.* at 3316, ¶ 15 (stating that the FWD is an unregulated information service, which falls under the FCC's jurisdiction).

[76] *Id.* at 3318, ¶ 18 (reasoning that Congress expressed its preference for "a national policy to preserve the vibrant and free market that presently exists for the Internet and interactive computer services").

[77] *Id.* at 3313, ¶ 11.

[78] *Id.* at 3310, ¶ 5.

[79] *Id.* at 3320-21, ¶ 21.

[80] *Id.* at 3320-22, ¶ 20-22 (finding that FWD would be considered an interstate information service in accordance with the FCC's 'mixed-use' doctrine).

appear to apply not just to FWD, but also to any communications service where the locations of the communicating parties are indeterminate.[81]

Second, the FCC invoked the US Constitution's 'Commerce Clause',[82] finding that there would be no "legitimate public policy purpose" served by state imposition of traditional economic regulation on FWD and concluding that the burdens of such regulation on interstate commerce would be "clearly excessive in relation to the putative local benefits."[83] By invoking the Commerce Clause, the FCC asserted the authority to pass judgment on the legitimacy of state efforts to regulate certain communications services, including the right to declare that any 'local benefits' that states might assert to protect their regulatory authority are not significant enough to justify interference with interstate activity.[84] This rationale, if sustained, is a powerful tool that the FCC can use to dictate the regulatory treatment of services and activities with mixed interstate-intrastate aspects.

2. Notice of Proposed Rulemaking on IP-Enabled Services

In March 2004, the FCC released its long-awaited notice of proposed rulemaking (NPRM) to examine legal and regulatory issues related to 'IP-enabled services' - the newly coined phrase that the FCC uses to describe voice services and applications that make use of Internet Protocol.[85] To stimulate discussion regarding the proper means of distinguishing among IP-enabled services, the FCC provided a list of functional and economic factors that it might use to divide these services into categories for different regulatory treatment:

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[81] *Id.* at 3322, ¶ 22.

[82] U.S. Const. art. 1, § 8, cl. 3 (giving Congress the power to "regulate commerce with foreign nations, and among the several states, and with the Indian tribes"); see Oregon Waste Sys. v. Dep't of Envt'l Quality, 511 U.S. 93, 98 (1994) (finding that the Commerce Clause "denies the States the power unjustifiably to discriminate against or burden the interstate flow of articles of commerce").

[83] Pulver Declaratory Ruling, *supra* note 63, at 3322-23, ¶ 23-24.

[84] *Id.* at 3323, ¶ 24 ("In a dynamic market such as the market for Internet applications like FWD, we find that imposing this substantial burden would make little sense and would almost certainly be significant and negative for the development of new and innovative IP services and applications.").

[85] *In the Matter of IP-Enabled Services, Notice of Proposed Rulemaking*, WC Docket No. 04-36, 19 FCC Rcd 4863, 4864, ¶ 1 (rel. March 10, 2004).

- the extent to which a service is functionally equivalent to traditional telephone services;
- the extent to which the service is a substitute for traditional telephone services;
- whether the service interconnects with the traditional telephone network (the PSTN) and uses North American Number Plan (NANP) resources;
- whether the service uses peer-to-peer technology or a centralised server; and
- whether any regulatory obligation should distinguish among the underlying transmission facility, the communications protocols used to transmit the information, and the applications used by the end-user to send and receive information.[86]

The NPRM focused mainly on one type of IP-enabled service - VoIP.[87] The NPRM inquired whether VoIP should remain unregulated or should be subject to some form of regulation[88] and whether any such regulation should be based on (i) the traditional common carrier regime created for monopoly providers of traditional telephone services,[89] (ii) the largely unregulated information service rules[90] or (iii) some new regulatory scheme under the FCC's ancillary Title I powers.[91] The FCC invited comment on the classification and treatment of different types of VoIP services, ranging from services such as Vonage that piggyback on broadband services provided by other companies

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[86] *Id.* at 4886-4890, ¶ 36-37.

[87] *Id.* at 4871-4876, ¶ 10-15.

[88] *Id.* at 4890-4897, ¶ 38-49.

[89] *Id.* at 4895, ¶ 46 (citing Title II of the Communications Act of 1996 (current version at 47 U.S.C. § 201 (1996)) as governing the regulation of common carrier telecommunications).

[90] *Id.* (citing Title VI of the Communications Act of 1996 (current version at 47 U.S.C. § 521 et. seq.) as governing the regulation of cable communications).

[91] *See id.* (citing Title I of the Communications Act of 1996 (current version at 47 U.S.C. § 151 *et. seq.*) for the proposition that Title I "confers upon the Commission ancillary jurisdiction over matters that are not expressly within the scope of a specific statutory mandate but nevertheless necessary to the Commission's execution of its specific statutorily prescribed functions"); *see also id.* (*citing* Computer & Communications Indus. Ass'n v. FCC, 693 F.2d 198, 213 (D.C. Cir. 1982), which declared that the Commission's Title I authority is "well settled").

to traditional telecom providers transitioning their circuit-switched networks to IP-based solutions to wireless providers that furnish multimedia services over their networks using the Internet Protocol.[92] These other services pose more difficult questions for the FCC than services like FWD, since most tend to offer access to the PSTN.[93]

Referring to traditional telephone companies' universal service fund, inter-carrier compensation, E-911, privacy and consumer protection obligations, the FCC asked which, if any, of these traditional requirements should apply to VoIP providers.[94] It noted that, in addressing these issues, it "would start from the premise that IP-enabled services are *minimally regulated.*"[95] (emphasis supplied) The FCC observed that the increasing demand for IP-enabled services, and VoIP services in particular, will encourage consumers to demand more broadband connections and thereby support the FCC's goal of encouraging the widespread deployment of advanced communications services.[96] It stated that it will rely wherever possible on competition, and will apply "discrete regulatory requirements only where such requirements are necessary to fulfil important policy objectives."[97]

Addressing an issue of great interest to essentially all segments of the industry - inter-carrier compensation for VoIP[98] - the FCC tentatively

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[92] *Id.* at 4883-84, ¶ 31-32.

[93] *Id.* at 4884, ¶ 32.

[94] *Id.* at 4886-87, ¶ 35-36.

[95] *Id.* at 4868, ¶ 5.

[96] *Id.*

[97] *Id.*

[98] *See id.* at 4904 ¶ 61 n.178 (citing 47 C.F.R. § 69.5(b), which states that "carrier charges shall be computed and assessed upon all interexchange carriers that use local exchange switching facilities for the provision of interstate and foreign telecommunications services"). The Communications Act requires an incumbent local exchange carrier to provide to any requesting telecommunications carrier interconnection with the ILEC's network "for the transmission and routing of telephone exchange service and exchange access." 47 U.S.C. § 251(c)(2) (1996). Inter-carrier compensation, or reciprocal compensation, is a fee agreement for charges assessed by local exchange carriers on service providers for sending traffic to the PSTN. 47 U.S.C. § 251(b)(5) (1996) (establishing reciprocal compensation arrangements "for the transport and termination of telecommunications"). The FCC believes that "the cost of the PSTN should be borne equitably among those that use it..." 19 FCC Rcd at 4904,

concluded that any service provider sending traffic to the PSTN should be subject to "similar" compensation obligations.[99] That situation, however, does not exist today, because there currently are different compensation regimes that apply in different situations.[100] This suggests that the FCC will want to coordinate this aspect of the regulatory regime applicable to VoIP with its ongoing efforts to establish a unified inter-carrier compensation system.

3. Order Denying Declaratory Petition of AT&T

In April 2004, the FCC ruled that an AT&T service, in which some calls were routed over the Internet, resembled a telecommunications service more than a VoIP service and therefore that AT&T should pay access fees to other telephone carriers with which it interconnected for delivery of its customers' calls.[101] AT&T had petitioned the FCC for a declaratory ruling that its IP telephony was exempt from interstate access charges in response to efforts by ILECs to impose such charges on AT&T's service.[102]

The FCC ruled that AT&T's phone-to-phone VoIP service is a telecommunications service subject to interstate access charges, at least on a going-forward basis.[103] Like its earlier ruling regarding pulver.com's Free World Dialup service, this ruling was carefully confined to the facts before the agency,

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¶ 61. The pricing for reciprocal or inter-carrier compensation must be just, reasonable and nondiscriminatory, but may include a reasonable profit for the local exchange carrier. *See* 47 U.S.C. § 252(d) (1996) (allowing compensation for costs incurred in providing interconnection, as well as transport and termination of traffic).

[99] 19 FCC Rcd at 4885, ¶ 33.

[100] In the US, inter-carrier compensation includes access charges and reciprocal compensation. Under current rules, there are three factors that determine the rate for inter-carrier compensation: 1) the type of communication traffic at issue; 2) the types of carriers involved; and 3) the end points of the communication. However, the FCC has recognised that the current system cannot be sustained in the developing marketplace, and is presently considering revision of these rules. *See generally Developing a Unified Inter-carrier Compensation Regime*, Further Notice of Proposed Rulemaking, CC Docket No. 01-92, 20 FCC Rcd 4685 (rel. Mar. 3, 2005).

[101] Petition for Declaratory Ruling that AT&T's Phone-to-Phone IP Telephony Services are Exempt from Access Charges, Order, WC Docket No. 02-361, 19 FCC Rcd 7457, 7466, ¶ 12-15 (rel. April 21, 2004) [hereinafter AT&T Petition].

[102] *See id.* at 7457, ¶ 1.

[103] *Id.* at 7466, ¶ 14-15.

and should not prevent the FCC from reaching a different policy result in its ongoing investigation into IP-enabled communications or in its far-reaching 'inter-carrier compensation' docket.[104] The key factor, as far as the FCC was concerned, was that AT&T uses transmission in IP format only as an internal network matter for some portion of a call between two end users, but does *not* offer the end users themselves any additional functionality or access to information as compared to a normal long-distance call.[105] Indeed, the end users typically are not even aware that anything other than a normal long-distance call is occurring.[106] The FCC employed the traditional 'net protocol conversion' test[107] to conclude that, unlike FWD, AT&T's offering did not meet the statutory definition for an 'information service', for which there could be either zero or reduced access charges.[108] This was in contrast to Free World Dialup, where the free calls that customers make are routed entirely over the Internet and never interconnect with the PSTN.[109] With a broadband connection, FWD members talk with each other computer-to-computer.[110]

The FCC rejected calls by some ILECs for an immediate determination that AT&T owed access charges retroactively for traffic that had been

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[104] *Id.* at 7457-58, ¶ 1-2.

[105] *Id.* at 7465, 12-13. Specifically, the FCC determined that because AT&T does not offer end users a "capability for generating, acquiring, storing, transforming, processing, retrieving, utilising, or making available information," its service therefore is not an information service.

[106] *Id.*

[107] *See generally In Re Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Communications Act of 1934*, First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 96-149, 11 FCC Rcd 21905, 21957-58, ¶ 106 (rel. Dec. 26, 1996) (describing the net protocol conversion test and its use in distinguishing "telecommunications services" and "information services").

[108] *AT&T Petition*, *supra* note 101, at 7465, ¶ 13. For a discussion of reduced access charges, *see 1983 MTS/WATS Market Structure Order*, 97 FCC 2d 682, 715 (1983) (exempting enhanced service providers (ESPs) from the payment of certain interstate access charges, and treating ESPs as end-users for the purpose of assessing access charges). *See also GTE Telephone Operators GTOC Tariff No. 1 GTE Transmittal No. 1148*, Memorandum Opinion and Order, CC Docket No. 98-79, 13 FCC Rcd 22466, 22469-70, ¶ 7 (October 30, 1998), *recon. denied* (February 26, 1999) (explaining reduced rates enjoyed by ESPs treated as end-users as compared to access charges assessed on traditional carriers).

[109] *See* Pulver Declaratory Ruling, *supra* note 63, at 3309, ¶ 4-5.

[110] *Id.* at 3309, ¶ 5.

terminated using this service.[111] Instead, the FCC ruled that whether to apply the decision retroactively would have to be determined on a case-by-case basis, considering the overall equities of doing so.[112] Following the FCC's decision, Southwestern Bell Telephone (SBC) filed a legal action against AT&T in the US District Court for the Eastern District of Missouri, seeking recovery of at least $141 million in access charges from AT&T.[113] Other ILECs have followed suit.[114] While AT&T may face short-term exposure for retroactive access charges, this decision merely establishes the broad parameters for how VoIP services fare under current inter-carrier compensation regimes.[115] FWD and other services that do not touch the PSTN are not subject to historic access charges, whereas VoIP services that mimic traditional circuit-switched services and begin and end on the PSTN are subject to such charges.[116] The real game remains in the FCC's VoIP rulemaking and inter-carrier compensation docket, where the agency likely will reach a policy decision that VoIP services that pass the "net protocol conversion" test - in whole or in part - could well be subject to inter-carrier compensation arrangements that are a fraction of present retail access charge levels.

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[111] AT&T Petition, *supra note* 101, at 7470-7472, ¶ 21-23.

[112] *Id.* at 7471, ¶ 22.

[113] Southwestern Bell Telephone L.P. v. AT&T Corp., 4:04-cv-00474-HEA (E.D. Mo. Apr. 22, 2004). SBC alleged, among other things, that AT&T orchestrated and implemented a fraudulent scheme to avoid tariffed access charges by delivering its long-distance calls to SBC for termination over facilities to which AT&T obtained access under the condition that the facilities be used for local traffic, thereby disguising its long-distance calls as local calls. Further, SBC argued that, in light of the FCC's decision regarding the AT&T Petition, AT&T had no excuse for its failure to pay lawfully tariffed access charges for all of the long-distance voice traffic it had delivered to SBC for termination. The case was dismissed with prejudice upon the filing of a stipulation of the parties, suggesting that a private settlement of the litigation had been reached.

[114] For example, following the FCC's decision regarding the AT&T Petition, Qwest Communications sued AT&T in federal court to recover tens of millions of dollars of access fees. Qwest Communications v. AT&T Corp., 1:04-cv-00909-EWN-MJW (D. Co. May 5, 2004). Qwest also alleged, among other things, that AT&T committed fraud by using local facilities to terminate long-distance calls, thereby violating tariffed access billing provisions. Id. The case is ongoing.

[115] *See* AT&T Petition, *supra* note 101, at 7466-67, ¶ 15.

[116] *See id.* at 7466-69, ¶ 15-18.

4. Order Applying CALEA to Certain Broadband and VoIP Service Providers

In August 2004, the FCC issued a notice of proposed rulemaking regarding the applicability of the Communications Assistance for Law Enforcement Act (CALEA)[117] to packet-mode services such as broadband Internet access and VoIP.[118] CALEA requires telecommunications carriers to ensure that their equipment is capable of providing electronic surveillance capabilities to law enforcement agencies.[119] In issuing the NPRM, the FCC tentatively concluded that Congress intended the scope of CALEA's definition of the term 'telecommunications carrier' to be broader than that of the Communications Act,[120] and that 'managed' VoIP services are subject to CALEA.[121] Under that rationale, a VoIP provider would be required to make call-identifying information available to law enforcement authorities so long as the information is "reasonably available" without "significantly modifying a network."[122]

In August 2005, the FCC issued an order determining that certain providers of broadband and VoIP services must be prepared to accommodate law enforcement wiretaps because these services essentially act as a replacement

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[117] 47 U.S.C. § 1001 (1996).

[118] *In the Matter of Communications Assistance for Law Enforcement Act and Broadband Access Services*, Notice of Proposed Rulemaking and Declaratory Ruling, ET Docket No. 04-295, 19 FCC Rcd 15676 (rel. August 9, 2004) [hereinafter *CALEA and Broadband Access NPRM*].

[119] *See* 47 U.S.C. § 1002 (requiring a telecommunications carrier to ensure that it is capable of "expeditiously isolating and enabling the government...to intercept...all wire and electronic communications carried by the carrier").

[120] *See CALEA and Broadband Access NPRM, supra* note 118, at 15697, ¶ 41 ("[I]t is 'a matter of law that the entities and services subject to CALEA *must be based on the CALEA definition*...independently of their classification for the separate purposes of the Communications Act.'" (*citing Communications Assistance for Law Enforcement Act*, Second Report and Order, CC Docket No. 97-213, 15 FCC Rcd 7105, 7112, 13 (2000)) (emphasis in original). *See also CALEA and Broadband Access NPRM, supra* note 118, 19 FCC Rcd at 15696-703 (discussing the statutory definition of "telecommunications").

[121] *Id.* at 15708-709, ¶ 56 (describing managed VoIP services as offerings to the "general public as a means of communicating with any telephone subscriber, including parties reachable only through the PSTN"); *cf. id.* at 15709, ¶ 58 (seeking comment on the proposition that non-managed VoIP services should not be subject to CALEA). *See generally id.* at 15707-710, ¶ 53-59 (explaining why managed VoIP services satisfy the requirements for CALEA applicability).

[122] *Id.* at 15714, ¶ 68.

for conventional telecommunications services.[123] As such, the FCC concluded that these new services are subject to the requirements set forth under CALEA for court-ordered wiretaps. However, the scope of the order is limited to services that permit users to place and to receive calls through the PSTN. In reaching its decision, the Commission found that CALEA's definition of a telecommunications carrier is broader than the definition provided in the Communications Act, and therefore may cover providers of services that ordinarily would not be considered telecommunications services.

5. Order Granting Declaratory Petition of Vonage Holdings

In November 2004, the FCC granted in part a request by Vonage Holdings for a declaratory ruling pre-empting an order of the Minnesota Public Service Commission that would have subjected Vonage to various types of traditional state telecommunications regulation.[124] The FCC declared that Internet phone service should not be governed by the same regulations as traditional phone service.[125]

In the FCC's view, the technical configuration of the Vonage service - in which an individual customer's VoIP telephone is usable on essentially any broadband Internet connection anywhere in the world - makes it impossible to separately identify purely intrastate components from purely interstate components.[126] Consequently, the FCC concluded that it is impossible to subject the service to two different regulatory schemes, thus warranting *unified*

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[123] See News Release, Federal Communications Commission, FCC Requires Certain Broadband and VoIP Providers to Accommodate Wiretaps (Aug. 5, 2005), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260434A1.doc.

[124] Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, Memorandum Opinion and Order, WC Docket No. 03-211, 19 FCC Rcd 22404, 22405, ¶ 1 (rel. Nov. 12, 2004) [hereinafter Vonage Petition] (making clear that the "[Federal Communications] Commission, not the state commissions, has the responsibility and obligations to decide whether certain regulations apply" to IP-enabled services).

[125] *Id.* (holding that state regulations must "yield to important federal objectives").

[126] *Id.* at 22418, ¶ 23 (finding no plausible approach to separating Vonage's service into interstate and intrastate components because the service is "far too multifaceted for simple identification of the user's location to indicate jurisdiction").

federal jurisdiction. The FCC commented that any service with a similar architecture also would be treated as entirely interstate in nature.[127]

The FCC stated that its ruling would apply to cable television, telephone and other companies that offer an Internet phone service similar to that which Vonage provides.[128] The FCC observed that Vonage's service and cable-provided VoIP were similar because both involved the offering of a suite of features and functions, a broadband connection and certain customer-premises equipment compatible with IP technology.[129] The FCC also relied on the fact that Vonage and cable VoIP both route traffic across state lines based on network architectures that do not conform to state boundaries.[130]

Nonetheless, the FCC's decision did *not* address a number of issues. Vonage had asked the FCC to classify it as an information service instead of as a telecommunications service.[131] Such a move would have had a profound impact on the industry because it would mean that providers of VoIP services would not have to pay the taxes and fees that traditional phone companies pay. The FCC did not rule on that request.[132] Nor did the FCC address the applicability to VoIP of general state laws governing taxation, fraud, commercial dealings, marketing, advertising and other business practices.[133] Finally, the FCC's order

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[127] *Id.* at 22424, ¶ 32 (finding that the "practical inseverability" of other IP-enabled services similar to Vonage precludes state regulation).

[128] *Id.* ("Accordingly, to the extent other entities, such as cable companies, provide VoIP services, we would preempt state regulation to an extent comparable to what we have done in this Order.").

[129] *See id.* at 22424, ¶ 32 n.113 (citing letters from various cable providers exhorting the Commission to extend the benefits of preemption to all VoIP providers because, while the network architecture of each cable VoIP provider is not identical, they are similar in their centralised network design).

[130] *Id.* (citing letters from various cable providers describing the difficulty in identifying whether a customer is accessing features at home or from a remote location).

[131] *Id.* at 22410, ¶ 12.

[132] *Id.* at 22411, ¶ 14 (reaching its decision "irrespective of the definitional classification of [Vonage's service] under the Act, i.e., telecommunications or information service, a determination we do not reach in this Order").

[133] *Id.* at 22404, ¶ 1 (expressly stating that it was avoiding this issue: "We express no opinion here on the applicability to Vonage of Minnesota's general laws governing entities conducting

did not address the applicability of access charges to VoIP.[134] These and other decisions have apparently been deferred to the FCC's ongoing general rulemaking docket considering IP-enabled services.[135]

Several states appealed the FCC's decision to the Circuit Courts, including California,[136] Minnesota,[137] New York[138] and Ohio.[139] The Minnesota, New York and Ohio cases were subsequently transferred to the United States Court of Appeals for the Ninth Circuit to be consolidated with the California appeal. However, on April 12, 2005, the State of California moved for dismissal, which was granted by the Ninth Circuit on April 15, 2005. Following dismissal of the California case, the remaining cases were consolidated and transferred again, this time to the US Court of Appeals for the Eighth Circuit. A briefing order for these cases is expected to be released by the Court of Appeals in the near future.

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business within the state, such as laws concerning taxation; fraud; general commercial dealings; and marketing, advertising, and other business practices. We expect, however, that as we move forward in establishing policy and rules for DigitalVoice and other IP-enabled services, states will continue to play their vital role in protecting consumers from fraud, enforcing fair business practices, for example, in advertising and billing, and generally responding to consumer inquiries and complaints.").

[134] In recent related matters, Level 3, a Colorado-based wholesale Internet and telecommunications provider, withdrew its petition regarding VoIP and access charges the night before the FCC was to issue a ruling, apparently in light of Chairman Powell's resignation from the FCC. Analysts believed that Level 3's withdrawal reflected its fear that an adverse ruling by the FCC would weaken Level 3's legal position against ILECs regarding access charges. Paul Kapustka, *Level 3 Withdraws VoIP Fees Petition*, NETWORKING PIPELINE, Mar. 22, 2005, *at* http://www.networkingpipeline.com/news/159904175 (last visited Nov. 1, 2005).

[135] *In the Matter of IP-Enabled Services*, Notice of Proposed Rulemaking, WC Docket No. 04-36, 19 FCC Rcd 4863 (rel. Mar. 10, 2004).

[136] Cal. Pub. Utils. Comm'n. v. FCC, No. 05-70007, Petition for Review (9th Cir. Jan. 3, 2005).

[137] Minn. Pub. Utils. Comm'n v. FCC, No. 05-1069, Petition for Review (8th Cir. Jan. 6, 2005); *see also* Nat'l Ass'n of State Util. Consumer Advocates v. FCC, No. 05-1122, Petition for Review (8th Cir. Jan. 11, 2005).

[138] N.Y. Pub. Serv. Comm'n v. FCC, No. 05-0160, Petition for Review (2d Cir. Jan. 10, 2005).

[139] Pub. Utils. Comm'n of Ohio v. FCC, No. 05-3056, Petition for Review (6th Cir. Jan. 10, 2005).

The Ninth Circuit Court of Appeals, in a prior case, rejected the FCC's attempt to classify cable television operators' high-speed modem service as an unregulated information service.[140] However, in a decision issued on June 27, 2005, the US Supreme Court reversed the decision of the Court of Appeals, holding that the FCC's classification of cable modem service as an information service was entitled to deference. In a 6-3 decision, the Supreme Court held that the Court of Appeals had erred in failing to defer to the FCC's reasonable policy choice, in which the agency had concluded, based on the ambiguous provisions of the Communications Act, that a cable modem service was not part telecommunications service and part information service, as the Court of Appeals had held, but rather was a pure information service.[141] The Supreme Court's decision will not fully resolve the issue, as further contentious debate will no doubt ensue both before the FCC and in Congress regarding the manner in which and the extent to which cable modem service ultimately should be regulated.[142]

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[140] FCC v. Brand X Internet Servs., 345 F.3d 1120 (9th Cir. 2003), *cert. granted*, 125 S. Ct. 655 (2004), *rev'd sub nom. and remanded by* Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Serv., 2005 U.S. LEXIS 5018 (2005).

[141] Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Serv., 2005 U.S. LEXIS 5018 (2005). The Court found that the FCC properly interpreted the definitions of 'information' and 'telecommunications' in the Communications Act. The Court accepted the FCC's conclusion that cable television operators do not "offer" telecommunications services because no telecommunications component is separately "offered" on a "stand-alone" basis; rather, any telecommunications element is "sufficiently integrated with the finished service to make it reasonable to describe the two as a single, integrated offering." *Id.* at *43.

[142] Prompted by the Supreme Court's decision, the FCC issued an order deregulating ILECs' DSL service, which previously had been treated by the FCC as a telecommunications service subject to common carriage and nondiscrimination obligations, but which the agency now declared, in light of the Supreme Court's Brand X decision, to be an unregulated information service. *See* News Release, Federal Communications Commission, FCC Eliminates Mandated Sharing Requirement on Incumbents' Wireline Broadband Internet Access Services (Aug. 5, 2005), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260433A1.doc. As a consequence of the FCC's ruling, in approximately one year ILECs no will longer be required to allow competing ISPs access to ILEC DSL platforms or offer the resale of DSL service. In a separate statement released concurrently with the DSL announcement, the FCC advised that ILECs and cable operators would be subject to Net Neutrality requirements, and that they must not block subscribers from accessing competing ISPs' content or websites, which presumably would include Internet telephony services that compete with the ILEC's or cable operator's own proprietary VoIP service. *See* News Release, Federal Communications Commission, FCC Adopts Policy Statement (Aug. 5, 2005), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-260435A1.doc.

6. Order Imposing E-911 Service Obligations on VoIP Providers

In June 2005, the FCC issued an order establishing rules that require providers of an "interconnected VoIP service" - generally any VoIP service that allows end-users to send calls to or from the public switched telephone network - to provide certain E-911 services to their customers.[143] Under the new rules, beginning November 28, 2005, all providers of interconnected VoIP service must provide E-911 service to all of their customers as a standard feature of service. In practice, this means that these providers must transmit all 911 calls to the local public safety answering point (PSAP), along with the caller's call-back number and the caller's registered geographic location. Interconnected VoIP service providers may fulfil these obligations by interconnecting directly to the existing E-911 wireline network (generally operated by ILECs), by indirect interconnection through a third party such as a competitive LEC, or via any other technological 'solution' that achieves the same result. Service providers must obtain, prior to the initiation of service, the end user's geographic location and provide the end user with a means of updating that information at any time.

In addition, beginning July 29, 2005, the rules require all covered entities to take a number of affirmative actions to inform and educate their subscribers of the limitations of E-911 service offered by interconnected VoIP service providers. One of these obligations is that service providers must advise all of their subscribers, both new and existing, of the circumstances under which E-911 service may not be available or may otherwise be limited as compared to traditional E-911 telephone service. Service providers also must distribute to all subscribers, both new and existing, "warning stickers or other appropriate labels" advising them if E-911 service may be limited or not available.

Although certainly marking a first significant step in this area, the FCC's order put off some of the more challenging questions surrounding the

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[143] The FCC defines an interconnected VoIP service as any service that (1) enables real-time, two-way voice communications; (2) requires a broadband connection from the user's location; (3) utilises Internet Protocol (IP) handsets; and (4) permits users to direct calls to and receive calls from the PSTN. This definition covers a broad class of VoIP service providers, ranging from location-specific VoIP services provided by, for example, cable television companies to 'nomadic' VoIP services provided by Vonage and others. *E911 Requirements for IP-Enabled Service Providers*, First Report and Order and Notice of Proposed Rulemaking, WC Docket No. 05-196, 20 FCC Rcd 10245 (rel. June 3, 2005); *see also* Nuvio Corp. v. FCC, No. 05-1248, Petition for Review (D.C. Cir. July 11, 2005).

application of E-911 principles to services that can be utilised on a nomadic basis in different geographic locations. The order includes a notice of proposed rulemaking that solicits comments on how to deal with a number of technical and operational issues associated with the provision of E-911 service as it relates to interconnected VoIP service and, in particular, to nomadic services. The order also left unanswered the fundamental issue of whether or not interconnected VoIP services should be classified as information services under Title I of the Communications Act or as telecommunications services under Title II. Although the FCC intentionally avoided answering this question, it did however assert that its authority over this area is derived from both Title I and Title II of the Act.

This order represents the FCC's first substantive step towards imposing a regulatory regime on VoIP service providers that utilise IP-enabled networks or technologies. Exactly what that regime will look like is quite unclear, as the FCC still faces other very challenging issues, including the development of a unified inter-carrier compensation regime, the possible application of universal service charges, the application of CALEA and other federal surveillance statutes, and other public safety and disability access issues.

B. Court Actions

1. *US District Court Order Enjoining New York State Telecom Regulation of Vonage Holdings*

In July 2004, a US District Court issued a preliminary injunction against the New York State Public Service Commission, prohibiting it from requiring Vonage Holdings Corporation to obtain an operating certificate as a condition to Vonage continuing to provide VoIP service to its customers in the State of New York.[144] In a ruling that mirrored an October 2003 federal district court order in Minnesota against that State's Public Service Commission,[145] the US District Court for the Southern District of New York enjoined New York State regulators from taking any further action to regulate Vonage until the FCC

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[144] Vonage Holdings Corp. v. New York Pub. Serv. Comm'n, 04 Civ. 4306 (S.D.N.Y. July 16, 2004) (order granting preliminary injunction).

[145] Vonage Holdings Corp. v. Minn. Pub. Utils. Comm'n, 290 F. Supp. 2d 993 (D. Minn. Oct. 16, 2003), *aff'd* 394 F.3d 568 (8th Cir. 2004).

ruled in various pending VoIP proceedings.[146] On November 14, 2004, the FCC issued its unanimous ruling pre-empting an order of the Minnesota Public Utilities Commission that would have subjected Vonage to various types of traditional, state telecommunications regulations.[147] Based upon the FCC's action, Vonage moved for a permanent injunction in December 2004.[148] A decision has not yet been issued on the request for permanent injunction, but the preliminary injunction will remain in effect until such time as the court rules.

2. *The US Court of Appeals' Decision Affirming an Injunction Against State Telecom Regulation of Vonage Holdings in Minnesota*

In December 2004, the US Court of Appeals for the Eighth Circuit upheld a lower court's order enjoining the State of Minnesota's Public Utility Commission from regulating Vonage Holdings' VoIP service.[149] The appellate court's ruling came on the heels of and relied upon the FCC's November 2004 *Vonage* decision, referring to that decision as "dispositively support[ing] the District Court's injunction."[150] Although the Court of Appeals deferred to the FCC's order, the Court did not review its merits, holding, on jurisdictional grounds, that such review could occur only in a new case brought to challenge the agency's ruling.[151]

Interestingly, the FCC's decision - which was premised on a finding that VoIP is *interstate* in nature and therefore within the FCC's jurisdiction, but which expressly declined to decide whether VoIP is an information service or a telecommunications service - was based on a *different* predicate than the lower court's decision in the *Vonage* case, which found that VoIP was an

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[146] Vonage Holdings Corp. v. New York Pub. Serv. Comm'n, 04 Civ. 4306 (S.D.N.Y. July 16, 2004), at ¶ 3-4.

[147] Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, Memorandum Opinion and Order, WC Docket No. 03-211, 19 FCC Rcd 22404, 22405, ¶ 1 (rel. Nov. 12, 2004).

[148] Vonage Holding Corp. v. New York Pub. Serv. Comm'n, 04 Civ. 4306 (S.D.N.Y. Dec. 20, 2004) (motion for permanent injunctive relief).

[149] Vonage Holdings Corp. v. Minnesota Pub. Util. Comm'n., 394 F.3d 568 (8th Cir. 2004).

[150] *Id.* at 569.

[151] *Id.*

information service. Yet, the Court of Appeals relied on the FCC's decision in affirming the lower court's injunction. Because the appellate court accorded the FCC order such broad deference, it seems unlikely that any other state commission will be successful in attempting to regulate VoIP in the short-term, at least until judicial review of the FCC's *Vonage* and NPRM rulings has occurred.

C. Legislation

There has been little federal legislative activity affecting Internet telephony. In April 2004, the US Congress enacted the Internet Tax Nondiscrimination Act, which extended a moratorium on taxes on Internet access through November 2007.[152] However, the law exempts VoIP from the moratorium.[153] The effect of the exemption may be tempered somewhat by the FCC's recent decision pre-empting traditional state public utility regulation of certain types of VoIP service.[154] Also, the Act makes clear that the moratorium does not affect E-911 and universal service charges issues.[155]

For the moment, Congress appears willing to allow the FCC and the courts to grapple with the thorny issue of how to regulate Internet telephony. However, if proposals for the omnibus re-write of US telecommunication laws move forward over the next year, it is certain that VoIP will be addressed by Congress as part of that review.[156]

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[152] Internet Tax Nondiscrimination Act, Pub. L. No. 108-435, 118 Stat. 2615 (current version at 47 USC § 151 (2005)). On April 19, 2005 a bill was introduced in the United States Senate to make the moratorium on Internet access taxes permanent. The bill is currently in Committee and has not yet been passed. *See* S. 849, 109th Cong. 1st Sess. (2005).

[153] *Id.* § 1108.

[154] Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, Memorandum Opinion and Order, WC Docket No. 03-211, 19 FCC Rcd 22404, 22405 ¶ 1 (rel. Nov. 12, 2004).

[155] *See* Internet Tax Nondiscrimination Act, Pub. L. No. 108-435, 118 Stat. 2615 (current version at 47 U.S.C. § 151 (2005)), at Sec. 1107(b).

[156] *See, e.g.*, Broadband Investment and Consumer Choice Act, S.1504, 109th Cong. (2005). The bill, proposed by Senator John Ensign, advocates a market-based approach and is intended to promote competition. It contains provisions prohibiting broadband service providers from blocking VoIP.

VII. THE INTERNATIONAL CONTEXT

Despite the rapid growth of VoIP, as of January 2005 only 49 out of 189 member states of the International Telecommunication Union (ITU) had clearly stated that VoIP is a legal service.[157] Regulatory approaches toward VoIP vary from country to country, but most have either left VoIP largely unregulated or prohibited VoIP completely.[158] As noted by the ITU, countries in which VoIP is banned tend to be those "where a telecommunication monopoly of the international gateway existed."[159] In such nations, monopolies have exerted pressure on regulatory authorities to prohibit VoIP in order to avoid losing revenues through price arbitrage.[160] Despite these efforts, VoIP use continues to accelerate and already constitutes a significant portion of international voice traffic.[161]

The rising global popularity of VoIP is partly attributable to increased broadband penetration rates.[162] The enhanced VoIP service quality that broadband subscribers today experience in comparison to that which was available in the mid-1990s when VoIP began to emerge[163] and the significant cost savings of VoIP[164] have spurred a sharp increase in global traffic of Internet

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[157] ITU News, *supra* note 22, at 4-5 (noting that, although VoIP is now considered "mainstream," there currently are more countries today that outlaw VoIP than those that allow it).

[158] *See id.* at 5 (reporting the findings of a survey of 132 ITU Member States conducted in 2004, where countries' treatment of VoIP was classified in the following categories: No Policy for IP Telephony (11), Full Competition (49), Partial Competition (11), Prohibited (24), Restricted (37)).

[159] *Id.* at 4.

[160] *Id.* at 6 (hypothesising that even though VoIP has flourished in countries that have not imposed regulation, some form of regulation - particularly regulation pertaining to interconnection, access to numbering resources, and essential facilities - may actually aid future VoIP deployment).

[161] *See* VoN WHITE PAPER, supra note 2, at 5 (up to 12% of international calls).

[162] The ITU estimates that at the beginning of 2004, there were more than 102 million broadband subscribers in approximately 100 countries. ITU News, *supra* note 22, at 5.

[163] *See id.* at 5-6 (explaining that people who "experimented with IP Telephony" at that time often did so through slow-speed, dial-up Internet access).

[164] *See id.* at 8 (comparing the cost of VoIP to traditional international calls, and noting that

telephony.[165] As the number of VoIP users continues to rise, so does the need to provide regulatory clarity.

Due to historical dependence upon incoming net settlement payments for voice traffic from more industrialised nations, developing countries have been disproportionately affected by the 'cannibalising' of revenues associated with the growth of international VoIP traffic.[166] In many cases, their response has been to treat VoIP restrictively either by allowing it to be used only by the monopoly incumbent, or by forbidding it altogether.[167] Other developing nations, however, have taken a more positive view, embracing VoIP as an integral tool in lowering costs to consumers, increasing competition, expanding broadband deployment[168] and bringing needed revenue to local economies.[169]

Perplexingly, use of this cost-saving technology often is restricted in countries with low tele-density levels that would benefit greatly from its deployment.[170] The roll-out of IP technology in developing countries would

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"VoIP minutes are typically priced at between one-fifth and one-tenth of the price of circuit-switched minutes").

[165] *FCC's Abelson Urges Business Leaders to "Think Globally"*, 2(30) TELECOM POL'Y REP. (Aug. 4, 2004), http://www.findarticles.com/p/articles/mi_m0PJR/is_30_2/ai_n6144372 (last visited Oct. 21, 2005) (citing figures provided by FCC International Bureau Chief Don Abelson, who at a roundtable discussion in July 2004 noted the "astounding" growth of IP-based services in certain parts of the world) [hereinafter *Abelson*].

[166] ITU News, *supra* note 22, at 8.

[167] *See* ITU News, *supra* note 22, at 9 (citing the example of Egypt, where Telecom Egypt was granted monopoly rights to provide IP telephony). *See also id.* at 5 (noting that there are 24 ITU Member States that prohibit IP telephony, either through IP-based networks or the public Internet).

[168] VoN WHITE PAPER, *supra* note 2, at 11.

[169] Ewan McPhie, *Restricting VoIP and WiFi Costs South Africa its Position as a Technology Leader in Africa*, BRIDGES.ORG, May 25, 2004, *at* http://www.bridges.org/e-policy/comments/voip_wifi/ (last visited Oct. 18, 2005) (discussing the role of VoIP in lowering the costs of locating and operating call centers in locations such as India and South Africa). These call centres provide outsourced telephone support services to "developed countries" at a significantly lower cost, while at the same time creating local jobs and bringing cash to local economies. *Id.*

[170] *See id.* (referring to the example of South Africa, where until 2005, VoIP use was limited to areas where less than five percent of the population has access to a telephone). B*ut see South Africa Set to Shake Up Telecoms Monopoly*, 5002 COMPUTERWIRE, Sept. 7, 2004, http://

allow for the provision of *both* voice and data services on a single combined economical network - a huge cost savings over traditional technology where voice and data are transmitted over separate networks - and would hasten the delivery of modernised telecommunications and information services to the people of such regions.[171]

Some countries in developing regions such as Africa have recognised the benefits of VoIP and legalised its use.[172] The policy group Bridges.org observed that "[t]hese progressive governments are boldly embracing new technologies to gain the long-term benefits of [information and communications technology], despite potential short-term losses in revenue as incumbent telecommunications providers restructure their approaches."[173]

European regulators also have taken strides to create a favourable environment for the growth of VoIP. At a recent plenary session of the European Regulators Group (ERG), held in Brussels, Belgium from February 10-11, 2005, the Group expressed its commitment to "creating a regulatory environment in which VoIP services can flourish."[174] In the Common Statement issued by the Group, regulators recognised the importance of ensuring that regulatory obligations on VoIP are objective, technology-neutral, non-discriminatory and transparent.[175] However, the Group qualified its endorsement, stating that national regulatory authorities may need to apply different measures within

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www.cbronline.com/article_news.asp?guid=93B7D30E-8347-47A1-A3E6-0B8CCE08B0F7 (last visited Oct. 18, 2005) (reporting the announcement by the South African Communications Minister that, beginning in 2005, value-added network service providers would be allowed to utilise an Internet platform to carry voice calls).

[171] *See* McPhie, *supra* note 169 (arguing that "[r]emoving restrictions and allowing competition to thrive in the communications sector will lead to greater choice, lower prices, and the proliferation of innovative services").

[172] *See id.* (pointing to countries such as Algeria, Mauritius, Mali, Nigeria and Kenya that are "moving to the forefront" of the communications arena in Africa by legalising VoIP).

[173] *Id.*

[174] Press Release, European Regulators Group, European Regulators issue Statement on VoIP; Focus on Core Topics in 2005 (Feb. 11, 2005), http://erg.eu.int/doc/publications/erg12_press_release.pdf.

[175] *See* European Regulators Group, ERG Common Statement for VoIP Regulatory Approaches 1, *at* http://www.erg.eu.int/doc/publications/erg0512_voip_common_statement.pdf.

their own countries in order to meet the ERG's objectives, and reserved to national regulators the authority to 'clarify' the rights and obligations of VoIP providers.[176] How VoIP service providers will be affected by the ERG's agreement is uncertain, particularly given the substantial reservation of regulatory power to national governments and the existing differences in the VoIP regulatory approaches of European nations.[177] The United Kingdom and Germany are noteworthy examples.

A. United Kingdom

The Office of Communications ("Ofcom"), an independent regulator and competition authority for U.K. communications industries, has taken what some VoIP service providers consider a "pro-competition" approach to regulating VoIP in the U.K.[178] Ofcom states that it is seeking to create an environment in which new technologies such as VoIP can flourish in the marketplace, so that consumers can benefit from a wider and more innovative range of services.[179] Taking a similar approach to that adopted by the United States by the Federal Communications Commission, Ofcom aims to limit the extent to which regulation creates distortions in the market.[180]

For example, although Ofcom initially determined that non-geographic numbers were suitable and sufficient to meet the needs of Communications Providers requiring numbers to launch VoIP services, it later recognised that the then available non-geographic number ranges failed to adequately meet

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[176] *Id.* at 1-4.

[177] *See* Ivar Ekman, *Next Call for Net Phoning: Regulation*, INT'L HERALD TRIB., May 26, 2005, *available at* http://www.iht.com/articles/2005/05/25/business/netphone.php (last visited Oct. 23, 2005) (explaining that even though the European Union's "central bureaucracy" has taken a light regulatory approach that favours growth and innovation, much of the regulatory power concerning VoIP remains at the national level in Europe, thereby resulting in a dramatically different regulatory landscape in each of the European Union's 25 member states).

[178] *See Vonage Launch Underlines Importance of Numbering Policy*, POLICY TRACKER, Jan. 13, 2005, http://www.vonage.com/media/pdf/res_01_13policytracker_05.pdf (last visited Oct. 20, 2005) (noting that Vonage chose the U.K. as its first European launch location due to the favourable regulatory environment there).

[179] *See* U.K. Office of Communications, *New Voice Services - A Consultation and Interim Guidance*, Sept. 6, 2004, http://www.ofcom.org.uk/consult/condocs/new_voice/anew_voice/?a=87101.

[180] *Id.*

the requirements for these services.[181] Consequently, Ofcom approved a new 056 number range for VoIP services.[182] The new numbering code is non-geographic, thereby giving consumers access to phone numbers that may be used anywhere in the country and that are not linked to any one particular location.[183] In order to facilitate a consumer's switch from traditional telephone service to VoIP, Ofcom also approved VoIP service providers' use of geographic numbers beginning with 01 or 02.[184]

Reflecting its lighter regulatory touch, Ofcom also has proposed that it is unnecessary for all voice services to offer access to all of the supporting features of traditional voice service, such as emergency calls (999).[185] In advancing that proposal, Ofcom reasoned that firstly, most telecom providers will offer access to 999 anyway and that most consumers likely would want at least one phone line with 999 access and therefore would select a provider that offered it; and secondly, that requiring all voice services to offer the same features could hinder companies from creating new products and offering customers more choices.[186]

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[181] *See* U.K. Office of Communications, Numbering Arrangements for Voice over Broadband Services, Feb. 24, 2004, at 1, ¶ 1.3, *available at* http://www.ofcom.org.uk/consult/condocs/vob/vobs/vobs.pdf [hereinafter *OFCOM Numbering Arrangements*].

[182] *Id.* (noting that numbers in the 056 range are not related to specific local areas; thus, they could be used for new services from anywhere with a broadband Internet connection); *see also* Graeme Wearden, *Ofcom Cheers Industry with VoIP Number Ruling*, ZDNET UK, Sept. 6, 2004, at http://news.zdnet.co.uk/communications/networks/0,39020345,39165620,00.htm (last visited Oct. 18, 2005); Press Release, U.K. Office of Communications, Ofcom to Encourage the Development of New Voice Services (Sept. 6, 2004) http://www.ofcom.org.uk/media/news/2004/09/nr_20040906.

[183] *Id.*

[184] *See id.* (explaining that the transition would be easier because consumers switching from traditional service to VoIP would not have to change telephone numbers).

[185] *See* U.K. Office of Communications, *New Voice Services - A Plain English Summary*, *at* http://www.ofcom.org.uk/consult/condocs/new_voice/anew_voice/new_voice_pes/.

[186] *Id.* In late 2004, Ofcom conducted an extensive public consultation concerning "how functional and reliable VoIP service should have to be," including 999 access. *See* Wearden, *supra* note 182. As of mid-2005, the results of this public consultation were still being considered by Ofcom and had not yet been released. *See* Carolyn Boyle, *Tune In, Turn On*, LEGAL WEEK, Apr. 14, 2005, *at* http://www.legalweek.com/ViewItem.asp?id=23749&Keyword=Tune (last visited Oct. 22, 2005).

B. Germany

The regulatory environment in Germany has made it more difficult for VoIP providers to effectively market their services and has discouraged some VoIP providers from entering the German market,[187] although rule changes currently are being considered. Presently, the German Regulatory Authority for Telecommunications and Posts ("RegTP") limits the allocation of geographic numbers to "network operators," thereby curtailing access to these numbers by Internet-based service providers that do not have their own networks.[188] Instead, VoIP service providers are assigned non-geographic numbers beginning with the 032 prefix, regardless of where the service is based.[189] RegTP imposed this restriction despite the fact that offering geographic numbers can be a particularly vital element in a VoIP provider's business plan to attract prospective consumers.[190]

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[187] *See Vonage Launch Underlines Importance of Numbering Policy*, POLICY TRACKER, Jan. 13, 2005, *at* http://www.vonage.com/media/pdf/res_01_13policytracker_05.pdf (last visited Oct. 21, 2005) (noting that Jeffery Citron, CEO of Vonage, objected to Germany's position on VoIP because it impaired VoIP providers' ability to compete with incumbents, and that Vonage was discouraged from entering the German market because of the lack of availability of geographic numbers to Internet-based service providers).

[188] *See German Regulators Consider Easing VoIP Rules*, TELECOMWEB, Dec. 2, 2004, *available at* http://www.telecomweb.com/news/1101751714.htm (last visited June 3, 2005).

[189] *VoIP Regulation: Getting Caught in the Wrong Place*, TOTAL TELECOM MAGAZINE, Feb. 1, 2005, at 16-18.

[190] *Compare id.* (quoting the co-founder of VoIP service provider Gossiptel on her belief that "[n]on-geographic numbering is a major restriction in Germany"), *and* Simon Taylor, *EU Regulators Agree to Level VoIP Playing Field*, IDG NEWS SERVICE, Feb. 11, 2005, *at* http://www.itworld.com/Net/3303/050211euvoip/ (last visited Oct. 23, 2005) (categorising the assignment of non-geographic numbers as "a strategy that can impinge upon VoIP players if customers prefer local numbers for business reasons"), *with* European Commission, *The Treatment of VoIP under the EU Regulatory Framework*, June 14, 2004, at 18, *at* http://europa.eu.int/information_society/topics/ecomm/doc/useful_information/library/commiss_serv_doc/406_14_voip_consult_paper_v2_1.pdf (encouraging member states to foster competition and provide access to geographic numbers), *and Ofcom Numbering Arrangements*, *supra* note 181, at 11, ¶ 4.4 (explaining that geographic numbering is particularly important for residential consumers because the services are easier to market if familiar numbering resources are used, and because it offers consumers greater certainty of the inclusion in calling options packages).

However, this approach is currently being revisited by RegTP,[191] which has stated that it is trying to strike a balance between creating a framework that encourages competition through the use of new technologies and services and preserving consumer interests and the security interests of Germany.[192] In addition to considering whether to allow VoIP service providers access to geographic numbers,[193] RegTP is also considering reducing the size of number blocks for allocation from 1,000 to 100.[194] Nevertheless, German regulators have made it clear that local numbers will not be assigned to people who do not reside in the area to which such numbers have been assigned.[195]

In Germany, as in the UK, decisions in coming months on pending proposals should provide a much clearer forecast of the regulatory climate that VoIP service providers will face, and whether they will be allowed to flourish in a lightly regulated environment.

VII. IP TELEPHONY IN INDIA

The regulatory landscape in India concerning Internet telephony has changed considerably since its first introduction, but the government's official disposition towards IP telephony, as of now, remains restrictive and unduly protective of incumbents.

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[191] *See* Press Release, RegTP, *RegTP: Regulatory Authority Creates Framework for Internet Telephony*, Nov. 15, 2004, http://www.regtp.de/en/aktuelles/pm/03117/index.html (noting that RegTP is planning to amend the regulations on geographic numbers to accommodate developments in the VoIP sector, which means that it will be possible for all providers offering access to the public telephone network to file for geographic number allocations).

[192] *See* RegTP, *Voice over IP Consultation*, *at* http://www.regtp.de/en/reg_tele/start/in_05-15-00-00-00_m/index.html (last visited Oct. 15, 2005).

[193] *See* Eva Bakowicz, *T-Online Starts to Offer VoIP Calls*, WORLD MARKETS ANALYSIS, Apr. 18, 2005, at 6 (noting that RegTP's decision to consider allowing VoIP providers to apply for geographic numbers stems from the regulator's intent to encourage competition).

[194] *See German Regulators Consider Easing VoIP Rules*, TELECOMWEB, Dec. 2, 2004, *at* http://www.telecomweb.com/news/1101751714.htm (last visited Oct. 8, 2005) (explaining that reducing the quantity of numbers in allocated blocks would lessen the chance of "number hoarding" by larger carriers and also would significantly decrease the entry cost for VoIP service providers).

[195] *Id.* (explaining that, pursuant to the German numbering system, it would be impossible for a local German telephone number to ring on a VoIP phone in another country).

In 1999, Internet Telephony was banned in India.[196] By 2001, India's Department of Telecommunications recognised the need to re-evaluate its position on Internet telephony and requested that the Telecom Regulatory Authority of India (TRAI) prepare recommendations on the opening up of this technology. TRAI released its recommendations on Internet telephony in February 2002.[197] These recommendations subsequently were adopted by the Department of Telecommunications on March 15, 2002.[198] Despite a general trend toward the "opening up of Internet Telephony" and a dramatic increase in the amount of VoIP traffic to India,[199] the regulatory environment in India continues to pose significantly greater hurdles to the provision of IP telephony, in comparison to the relatively hands-off approach adopted in countries such as the United Kingdom and the United States.[200]

In India, Internet telephony may be provided only by Internet Service Providers (ISPs) within their service areas.[201] ISPs seeking to provide VoIP services must obtain a licence amendment to that effect,[202] and may not

[196] *See* India's New Telecom Policy 1999 § 3.2, *available at* http://www.trai.gov.in/npt1999.htm (noting that Internet telephony "shall not be permitted at this stage," but that the topic would be subject to future review by the Government).

[197] *See* Telecom Regulatory Authority of India, Recommendations on Opening Up of Internet Telephony § A(2), Feb. 20, 2002, *available at* http://www.trai.gov.in/IP_Recommendations.htm (clarifying that the February 2002 Recommendations were formulated by an internal group within TRAI after consulting with the general public and with all stakeholders) [hereinafter TRAI Recommendations].

[198] *See* Press Release, Press Information Bureau, Government of India, Government Accepts TRAI Recommendations on Opening Up of Internet Telephony (Mar. 15, 2002), *available at* http://pib.nic.in/archieve/lreleng/lyr2002/rmar2002/15032002/r1503200217.html.

[199] For example, VoIP traffic to India increased 190 percent in 2002. *See Abelson*, *supra* note 164 (citing figures provided by FCC International Bureau Chief Don Abelson, who at a roundtable discussion in July 2004 underscored the "astounding" growth of IP-based services in certain parts of the world and the need for US telecom industry leaders to be mindful of related developments around the world).

[200] See Department of Telecommunications, Government of India, Guidelines for Issue of Permission to Offer Internet Telephony Services, at § 1, Apr. 1, 2002, *available at* http://www.dotindia.com/isp/guidelines.doc (referring to the decision of the Government of India to allow Internet telephony through ISPs after April 1, 2002, but setting forth various restrictions on these services) [hereinafter "DoT Guidelines"].

[201] *Id.* at § 1.

[202] *Id.* at § 8(i).

interconnect voice calls with ISPs who are not licensed to offer Internet telephony services.[203] In addition, Internet telephony is allowed only where it falls into one of three narrow categories:

- PC to PC (either within or outside India),
- PC to Telephone (where the PC is located in India and the telephone is located outside India),
- IP based H.323/SIP Terminals in India to similar Terminals either within India or abroad that employ the Internet Assigned Numbers Authority (IANA) IP addressing scheme.[204]

The expressed rationale for these restrictions on Internet telephony is protection of the status of facilities-based operators.[205] As explained by the TRAI, India's facilities-based operators are subject to a universal service obligation and thus are required to provide telephone service in rural and other unprofitable areas.[206] In the TRAI's view, if Internet telephony is allowed to disrupt the PSTN/ISDN settlement system, facilities-based operators, particularly International Long-Distance Operators (ILDOs), may lose revenue needed to roll out new infrastructure and facilities-based networks, in turn causing a negative impact on India's tele-density goals.[207]

In furtherance of the deferential treatment of facilities-based operators, the TRAI and India's Department of Telecommunications (DoT) have placed traditional telephony and Internet telephony into two distinct categories, noting that at the time the recommendations on opening up Internet telephony were drafted, comparable levels of service between the two technologies were not yet available.[208] Regulators classify Internet telephony as an "Application

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[203] *Id.* at § 3(vi).

[204] *Id.* at § 2.1.

[205] *See* TRAI Recommendations, *supra* note 197, at § B.2.3 (referring to facilities-based operators and noting that "it is important not to disturb significantly their revenue streams to which they are entitled in accordance with the stipulations in the Licenses granted to them").

[206] *Id.*

[207] Telecom Regulatory Authority of India, Explanatory Memorandum to Recommendations of the TRAI on Opening Up of Internet Telephony § I (1.2), Feb. 20, 2002, http://www.trai.gov.in/Explanatory_Memorandum(20-02-2002).htm.

[208] *See id.*at § I(1.4) (stating that "there is a need to clearly differentiate between PSTN base

Service" capable of processing voice signals that is employed through the public Internet.[209]

Unlike VoIP services in the US, which frequently begin or end (or both) through the PSTN, Internet telephony in India may not involve the PSTN or make any use of a traditional analogue telephone located within the country.[210] Although ISPs are not permitted to utilise the PSTN in the provision of Internet telephony services, facilities-based operators in India may incorporate VoIP technology into their respective networks as part of a "managed VoIP backbone".[211] According to the TRAI, the capacity to deploy a managed VoIP backbone in lieu of the PSTN backbone is intended to give facilities-based operators broader choices in determining the most cost-effective means to provide service in their areas, and thereby to enable facilities-based operators to invest realised savings in the last mile of the access network.[212]

Despite the apparent good intentions of India's telecom regulatory authorities in attempting to protect facilities-based operators' ability to meet

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real-time telephony, and Internet Telephony offered on the public Internet, which is a voice application, based on client server architecture of the Internet, and is non real-time and thus at present cannot be compared to the conventional telephony service derived from PSTN/ ISDN/PLMN"). *See also* DoT Guidelines, *supra* note 200, at § 2.4.

[209] *Id.* at § B.2.1 (noting further that Internet telephony in India shall conform to the IANA IP addressing scheme, as opposed to the ITU's E.164 Global Switched Telephone Network numbering scheme).

[210] The DoT Guidelines do not consider the following as Internet telephony services:

(i) Voice communication from anywhere to anywhere by means of dialing a telephone number (PSTN/ISDN/PLMN) as defined in National Numbering Plan.
(ii) Originating the voice communication service from a Telephone in India.
(iii) Terminating the voice communication to Telephone within India.
(iv) Establishing connection to any Public Switched Network in India.
(v) Dial up lines with outward dialing facility from nodes.

DoT Guidelines, *supra* note 200, at § 3(i)-3(v).

[211] *See* TRAI Recommendations, *supra* note 197, at §§ 3.2 and 4.2 (explaining that permission to employ a managed VoIP backbone is contingent upon the operator's ability to deliver toll quality service over a backbone that is transparent to both fax and calls from voice band modems). Operators may also offer "lower than toll quality" telephony service over a managed VoIP backbone, so long as subscribers are notified of the lower quality of service, the lower applicable tariff and the distinctive service code. *Id.* at § 4.3.

[212] *Id.* at § 4.1.

their universal service obligations and to invest in infrastructure, the TRAI's and DoT's view may be shortsighted. The preferential treatment being accorded to incumbent carriers, and the restrictions and burdens being imposed on competitive Internet telephone providers risk delaying, and perhaps even irreparably injuring, the development of a corps of competitive Internet telephone service providers in India. The fate of the CLEC industry in the United States bears fair warning of the likely outcome of a regulatory regime that is too deferential to and protective of, incumbent facilities-based carriers. Should that be the course followed in India, the country may fail to fully realise the benefit of a communications medium that otherwise could provide a growth engine for its economy and deliver state-of-the-art telecommunications and information services to its citizens.

VIII. CONCLUSION

While the FCC and court decisions of 2004 and 2005 have begun to define the regulatory framework that will be applied to VoIP in the United States, it likely will be at least another two years until there is real certainty about what that framework will look like. In that time, the FCC will issue decisions in its Packet-IP Services, inter-carrier compensation and other rulemaking proceedings, and interested parties undoubtedly will pursue judicial review of those rulings. Congress may enter the mix as well, should it proceed to rewrite the US telecommunication laws. Although the technological and economic efficacy of VoIP ensures that it will continue to revolutionise telephony in the United States and abroad, these proceedings will play a significant role in determining just how soon and to what extent American businesses and consumers will enjoy the full benefits of VoIP telephony. Moreover, as consolidation in the US telephone industry continues (witness, for example, the recent Verizon-MCI, Southwestern Bell-AT&T and Sprint-Nextel mergers), reducing the extent of competition and extending oligopoly conditions in the US wireline and wireless telephone markets, VoIP - with lower capital requirements and numerous upstart ventures - will provide some discipline to the increasing market power of the remaining incumbent carriers.

Elsewhere around the globe, similar administrative, legislative and judicial deliberations will be following a somewhat parallel course, although not necessarily as quickly or with the same results. Particularly in less developed countries, where there is a greater digital divide and where IP telephony

promises greenfield benefits, it will be especially important for decision-makers to scrutinise incumbent monopolists' claims that the introduction of Internet telephony will jeopardise rather than hasten the advent of universal service and infrastructure development. In formulating telephone regulatory policy for the next decade, regulators worldwide need to consider the greatly enhanced efficiency and functionality of telephone services and networks that can be realised through Internet telephony in a free, open and competitive marketplace that is unhampered by restrictive and burdensome regulation.