

## **The Current Status of VoIP**

Document Two – The Present

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## **Introduction**

This paper is the second in a three part series that will ultimately detail the past, present and future of Voice over Internet Protocol (VoIP). The use of VoIP by individual consumers was the beginning of a massive move from traditional telephone systems to a form of new media where voice and other forms of digital media could converge with an already established data network. Major advancements in the technology are the result of business development and adoption. The cultural, economic and regulatory events surrounding this new technology present a current snapshot of our global culture. Businesses, local and state governments, and individual consumers are all trying to maneuver and manipulate the definitions of the technology: positioning the benefits in their favor.

The focus of this paper is to detail the present status of VoIP by examining this technology's cultural, economic, and regulatory condition. For the sake of brevity, this paper focuses on this technology and its place in the business world

## **The Current Cultural Climate Around VoIP**

The cultural climate around the technology is difficult to document, or even understand. It is not the technology itself that creates a cultural impact, but the behavior and decisions of those who use the technology in their businesses.

The ability to inexpensively call international locations has made it easier for large corporations to set up call centers outside the borders of the United States. This "outsourcing" of jobs is one of a few actions related to Internet telephony that has had an effect on the culture of both America and the locations of new call centers. The transition

of jobs (roughly 250,000<sup>1</sup>) from America to others around the world has more to do with economic factors than it does with a specific technology. The technology provided the means for the business leaders to make the changes. It also provided an economical method to help companies support their products outside normal working hours.

Before call centers were moved to other countries, corporations were limited to cost restraints to operate between the hours of 9:00 AM and 5:00 PM. Even today, it is very difficult to speak with a government employee after 5:00 in the evening. Corporations knew that they had to provide customer support outside the normal working hours. To do this, some companies started second and third shifts in their existing call centers. Other companies installed call centers in each time zone. Both ideas greatly increased the operating costs and did little to improve customer relations.<sup>2</sup> When VoIP was standardized in 2000 and 2001, large companies started to move their call centers to exotic countries like India, South Africa and the Philippines.<sup>3</sup> It is at these locations where labor costs are often 85% less than comparable costs centers in the U.S.<sup>4</sup> In addition to lower labor rates, the education levels of the "outsourced" call center staff is far superior to the education levels of those who work in U.S. Call centers.<sup>5</sup>

The advances in telephony have created opportunities for business and government leaders. The supervening necessities used as a motivating factor in the transfer of jobs from the U.S. was only apparent after the introduction of the technology. As economic and regulatory changes take place, the culture supporting the businesses will also change. Business leaders (and even politicians) will have to answer to this change.

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<sup>1</sup> Andrea Walker. "Do-Not-Call List May Force More Call Centers Overseas."  
*Knight Rider Tribune Business News*, (2003): 1, Proquest.

<sup>2</sup> Rich Tehrani. "The brace new world of Internet telephony in the contact center."  
*Customer Inter@ction Solutions* 20, no. 7 (2002): 6, Proquest.

<sup>3</sup> Ibid

<sup>4</sup> See #1

<sup>5</sup> See #2

## The Current Economics of VoIP

VoIP has financially affected both industry and state. The current status of four distinct groups can describe the current financial atmosphere surrounding VoIP: the first is the U.S. federal government and, more specifically, the 50 U.S. states that have traditionally regulated telecommunications. The second group is the legacy telecommunications companies who are desperately trying to stabilize their businesses and survive a massive exodus of customers to ITSPs. The third group is the ITSPs who are taking business away from the large legacy network and who are also taking tax revenue way from the states. The fourth group is the businesses that are trying to save money by adopting VoIP technology.

The U.S. government has decided to take the regulatory right of VoIP telephone calls from the individual states because the communication itself does not travel on a fixed line like traditional phone calls. The Federal Communications Commission (FCC) is expected to approve a request by Vontage Holdings, Inc. (a start-up company offering Internet phone plans to consumers) declaring the company is an "interstate service." This would free Vontage from numerous state telephone regulations, including certification to offer service, service-quality and reporting requirements, and contributing to state phone-subsidy programs.<sup>1</sup>

This ruling could be devastating to state and local government funding. However, because the call isn't tied to the state (both geographically and within the legacy phone system) it is unfair for ITSPs to pay tax and follow the same rules as the large legacy companies. Proponents of this ruling worry that other companies might find a way to use

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<sup>1</sup> Anne Marie Squeo. "Federal Ruling on Web Calling Is Expected to Aid Sectors Growth." *The Wall Street Journal*, November 09, 2004.

this decision to characterize their traffic as interstate.<sup>1</sup> About 24 states collect at least \$1.9 billion a year from their own Universal Service plans, which subsidize rural phone service and Internet service to schools nationwide.<sup>2</sup> Mr. Brad Ramsay, general counsel of the National Association of Regulatory Utility Commissioners, states that, "the pool [of large legacy providers] would shrink considerably as customers began switching from traditional phone service to Internet-based plans." In addition, this loss of revenue would not necessarily be reflected on the bills of traditional phone customers, but it could lead states to boost other taxes such as income or property.<sup>3</sup>

AT&T, one of the largest telephone companies, has already attempted to define its traffic as interstate by partially transporting some phone traffic over the Internet. FCC Chairman Michael Powell has been outspoken about the need to free emerging Internet technology from regulations created for the old Bell phone monopolies that no longer exist. He stated that a phone call placed over the Internet from one computer to another is not subject to traditional telephone taxes and fees.<sup>4</sup> He also noted that AT&T's move to transfer some of their calls over the Internet does not meet the requirements and is still subject to state regulation.<sup>5</sup>

AT&T, and all other legacy telecommunication companies, are also losing millions of dollars each month. For example, Verizon (and its predecessors) has controlled local phone service in the Northeast since the start of the 20<sup>th</sup> century and has reduced its total telephone line count by 16% since the start of 2001.<sup>6</sup> That's roughly 9 million telephone lines that are no longer used in the northeast corridor. Duane Ackerman, the chairman and

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<sup>1</sup> Ibid

<sup>2</sup> Squeo. "Federal Ruling on Web Calling Is Expected to Aid Sectors Growth."

<sup>3</sup> Ibid

<sup>4</sup> See #1

<sup>5</sup> See #1

<sup>6</sup> Ken Brown and Almar Latour.

"Heavy Tool: Phone Industry Faces Upheaval As Ways of Calling Change Fast."  
*The Wall Street Journal*, August 25, 2004.

chief executive of BellSouth Corp. stated, "Our industry and our business is going to change more in the next five years than it has during the last 20 combined."<sup>1</sup> This fundamental shift has been compared to the threat faced by railroads in the boom years following World War II. As the nation embraced the automobile and airplane, railroad officials worried about the new technologies that circumvented their network or tracks. Today long-distance passenger rail service is almost non-existent in much of the country.<sup>2</sup>

The legacy phone companies are trying to avoid the same fate. The Bells have lost some 28 million local phone lines since the end of 2000 – a drop of more than 18%. This is the first time since the Great Depression that phone companies have seen their lines decline.<sup>3</sup> The drop of 18% in total number of lines mirrors the drop in revenue AT&T has had since 2001. Some securities analysts believe that AT&T's revenue could drop another 30% over the next three years.<sup>4</sup> The CEO of Qwest Communications, Richard Notebaert, recently showed his board of directors a mock 19<sup>th</sup> century argument for blocking the development of railroads to protect business on canals. His point: such resistance to change is futile.<sup>5</sup> Mr. Notebaert also stated, "If you don't embrace new technologies as an opportunity, then you could find yourself like the riverboat. You can either grab it or be a victim."<sup>6</sup> And Doreen Toben, Verizon's chief financial officer, says she isn't overly worried about the rise of start-ups such as Vontage because they have only a small number of customers. However, she calls phone service from cable-TV companies "a real threat."<sup>7</sup>

Cable companies have been under a lot of pressure lately from satellite dish networks. This pressure has been the impetus for their segue into the telecommunications

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<sup>1</sup> Ken Brown and Almar Latour. "Heavy Tool: Phone Industry Faces Upheaval As Ways of Calling Change Fast."

<sup>2</sup> Ibid

<sup>3</sup> See #1

<sup>4</sup> See #1

<sup>5</sup> See #1

<sup>6</sup> See #1

<sup>7</sup> See #1

industry. Cable has an advantage over some of the small VoIP service providers – they are already wired in most homes. In just over a year, one out of every eight households in Portland, Maine, has signed up for Internet phone service supplied by Time Warner Inc.'s cable-television unit.<sup>1</sup> Other companies, like Cablevision, are bundling their products with VoIP telephone service for ~\$100/month.<sup>2</sup>

The last group is the businesses that have adopted VoIP. Many companies, like Queens Long Island Medical Group (QLIMG), have made the switch to VoIP and have made significant reductions in their monthly telecommunications costs. After a \$2 million dollar investment in new equipment and an improved Internet connection, QLIMG is saving \$400,000 per month<sup>3</sup>. On a side note, most companies don't find the cost savings the top benefit of VoIP – it is the improvements to their network and Internet connection that they feel are the most advantageous to their productivity. Roberta Fox, a writer for Computing Canada wrote in her story *Biggest obstacle to acceptance of VoIP may be regulatory*,

"What I find so interesting is the greatest benefits discovered are generally from areas that had not planned for or initially expected. In most instances, the productivity improvements gained were from the new features or applications that the VoIP equipment supported and less from displacing traditional voice telephony applications or equipment. They all said that they had to improve their local area network (LAN), and sometimes wide area network (WAN), infrastructure to reliably provide voice transport."<sup>4</sup>

This quote points out the benefit that some companies may find when they adopt VoIP. However, I think that this statement could not be made for most companies. I can understand that a large organization may see cost (and non-cost) related benefits, but I believe that a smaller company would have a difficult time realizing the full potential of

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<sup>1</sup> Squeo. "Federal Ruling on Web Calling Is Expected to Aid Sectors Growth."

<sup>2</sup> Ibid

<sup>3</sup> Al Senia. "Value of VoIP resonates with Long Island medial group."  
*America's Network* 108, no. 14 (2004): 16-17, ABI/INFORM Global

<sup>4</sup> Roberta Fox. "Biggest obstacle to acceptance of VoIP may be regulatory."  
*Computing Canada* 30, no. 13 (2004): 15, ABI/INFORM.



VoIP. For example, a small company may have to hire an extra IT professional. The direct and indirect costs associated with a new employee may erase any benefit be reduced telecommunication costs.

## **The Current Regulatory Events Affecting VoIP**

Regulating packetized information brings up a delicate subject for many telephone and Internet users. Most people agree that it is critical to provide a supportive and fair framework that encourages competition regardless of the network media, whether telecommunications, cable or wireless. It is important that innovative and advanced technology solutions (such as VoIP) are not hindered by cumbersome and archaic frameworks based on outdated technologies or regulatory measures.<sup>1</sup>

Packetized information is fundamentally different than the information that travels across a public switched telephone network (PSTN). Voice packetization involves appending headers with routing information to the voice data. Multiple voice samples are combined into a packet and the voice packet is switched hop-by-hop through the network.<sup>2</sup> To summarize, the voice signal is broken up into small pieces (packets) and sent though the network one-by-one. The process of packetization compresses the callers voice signal, transfers it over the IP network, and it is then decompressed at the other end.<sup>3</sup> Current regulatory events involving VoIP seem to stem from the FCC and their decision to regulate the use of this technology.

Over the last several years the FCC as ignored VoIP because the technology had a relatively low number of users. At the end of 2003, it was estimated that there were

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<sup>1</sup> Fox. "Biggest obstacle to acceptance of VoIP may be regulatory."

<sup>2</sup> P.P. Francis-Cobley and A.A. Coward "Voice over IP versus voice of frame relay"  
*International Journal of Network Management* 14 (2004): 223-230, Proquest.

<sup>3</sup> Morris Edwards. "IP telephony ready to explode into corporate world. (Industry Trend or Event)."  
*Communications News* 38, no. 5 (2001): 96-97, Proquest.

131,000 VoIP users in the United States. At the end of 2004 it is estimated that the total number of VoIP users in the United States will top 1 million.<sup>1</sup>

On October 20, 2004, FCC Chairman Michael Powell noted that individual states could not regulate VoIP and that the federal government would seek broad regulatory authority. Powell made this decision to prevent a patchwork of conflicting rules like those that have ensnared the traditional phone business for decades.<sup>2</sup> Moreover, Powell stated that, "We cannot avoid this question any longer," and that, "It is very likely that treatment of VoIP will have some of the farthest reaching consequences of anything this commission has done or will do."<sup>3</sup> This was an intelligent decision. Consider, for example, a business user who sends a VoIP voice mail message to a remote consultant. The packetized nature of the voice call (or message) would make it near impossible to monitor, manage or pay for the portions of those packets that travel through states with varying degrees of regulation or tax structures. In other words, it is not realistic to compare a PSTN to a VoIP network.

There are other reasons the federal government wishes to have authority of the use of VoIP. Powell stated that questions related to the taxation and connectivity to "911" emergency assistance is best left to the federal government because the technology erodes geographic barriers. This situation puts current ITSPs on edge, wondering if they will have to abide by the same technical requirements that competitive local exchange carriers (CLECs) are required to abide by when they provide local services. On the surface, the addition on "911" assistance to VoIP calls may not sound significant; it opens up a door for the federal government to regulate the Internet. Not only is the "911" assistance program going to be a requirement, but electronic surveillance (under the CALEA (Communications

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<sup>1</sup> Mark Jewell. "FCC to Seek Internet Based Phone Oversight"  
[http://story.news.yahoo.com/news?temp=story&u=/ap/powell\\_voice\\_over\\_net](http://story.news.yahoo.com/news?temp=story&u=/ap/powell_voice_over_net)  
(accessed October 20, 2004).

<sup>2</sup> Ibid

<sup>3</sup> See #1

Assistance for Law Enforcement Act)) may be required for the Internet Service Providers (ISPs) that are providing VoIP services.<sup>1</sup> The CALEA, an act started in 1994, requires that telecommunications services rewire their networks to provide police with guaranteed access for wiretaps. The legislation also empowered the FCC to issues regulations defining what categories of companies were subject to the broad sweeping legislation. So far, only traditional PSTN (analog) companies and wireless phone services have been subject to CALEA.<sup>2</sup> This combination of this act and the 1996 Telecommunication Act (Federal Communications Act), have given the Federal Bureau of Investigation (FBI) the legal right to wiretap DSL and Broadband connections. "Dataveillance," as Mr. Torpe calls it, is the new surveillance.<sup>3</sup>

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<sup>1</sup> Kelly Teal. "What Does VoIP Regulation Mean to You?" <http://www.x-changemag.com/tdhotnews/4bh1112520.html> (accessed November 21, 2004).

<sup>2</sup> Konrad Trope. "Current Legal Issues Surrounding the Regulation of Voice Over Internet Protocol." *Intellectual Property & Technology Law Journal* 16, no. 5 (2004): 10, Proquest.

<sup>3</sup> Ibid

## Conclusion

This paper is the second in a three part series that will ultimately detail the past, present and future of Voice over Internet Protocol (VoIP). The focus of this paper is to detail the present status of VoIP by examining this technology's cultural, economic, and regulatory condition.

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The cultural climate around the technology is difficult to document, or even understand. It is not the technology itself that creates a cultural impact, but the behavior and decisions of those who use the technology in their businesses.

VoIP has financially affected both industry and state. The government, legacy networks, ITSPs and adopting businesses are either feeling venerable or powerful in the economic climate provided by the new rules of telecommunications.

Regulation of VoIP from a governmental point of view is understood – but the implications of that regulation may create changes to the way people use the Internet. There are both benefits and disadvantages associated with the regulation of a large data network.

The future of VoIP will bring many wonderful and scary changes to our technological world. Building on a long past of communicating without regard to special distance, VoIP is the next step in telecommunication. One that will hopefully bring people together and provide our global society with the means to freely communicate.

## Appendix – Abbreviations and Acronyms

ARPANET	Advanced Research Projects Agency Network
CALEA	Communications Assistance for Law Enforcement Act
CLEC	Competitive Local Exchange Carriers
CT	Computer Telephony
DSL	Digital Subscriber Line
FCC	Federal Communications Commission
IP	Internet Protocol
ISP	Internet Service Provider
ITSP	Internet Telephony Service Provider
HTTP	Hypertext Transfer Protocol
PBX	Private Branch Exchange
PSTN	Public Switched Telephone Network
QoS	Quality of Service
SMBs	Small and Medium Sized Businesses
T-1	Trunk Level 1
TCP/IP	Transmission Control Protocol / Internet Protocol
URL	Universal Resource Locator
VAR	Value Added Reseller
VoIP	Voice of Internet Protocol
WAN	Wide Area Network

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