

REGULATORY IMPLICATIONS OF “UNIFIED COMMUNICATIONS”:
WILL MICROSOFT BE THE WORLD’S BIGGEST PHONE COMPANY?

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17th Biennial Conference
International Telecommunications Society
June 24-27, 2008
Montreal, Quebec, Canada

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ABSTRACT

REGULATORY IMPLICATIONS OF “UNIFIED COMMUNICATIONS”: WILL MICROSOFT BE THE WORLD’S BIGGEST PHONE COMPANY?

It is beyond evident that the traditional U.S. telecommunications regulatory classification schemes have become dysfunctional impediments to emerging IP-enabled “unified communications” and integrated services. This could apply broadly to the entire value-added services regime, but this paper will focus primarily on a particular example: the offering of unified communications software announced by Microsoft on October 16, 2007, including Microsoft Office Communications Server 2007 and Microsoft Communicator 2007. According to press reports, these “bring together a broad range of communications options, including voice, instant messaging and video into a single, consistent experience.”

Microsoft is taking its software and applying it to phone calls. “We are moving phone calls onto the Internet, and the performance of the hardware is helping drive this forward,” Bill Gates is quoted as saying. Users can, “initiate a conversation by e-mail, voice, video or instant messaging from within Microsoft Office System applications,” according to Jeff Raikes, president of Microsoft’s Business Division. “Over the next three years more than 100 million people will be able to click-to-communicate . . .” replacing the traditional PBX. “In 10 years from now when you see a desktop phone in a movie, you will remember the days when you had one of those on your desk,” Gates predicted.

IP-based voice and video capability will be an inherent part of the Microsoft desktop platform, substituting for, and possibly replacing, that antique device, the “telephone”. This potentially raises an array of challenging regulatory questions. Is this within the scope of the FCC’s jurisdiction at all? If so, into what regulatory classification does it fall? Is it a VoIP service, with obligations to comply with E911, CALEA and other obligations? How does this relate to Skype and Vonage and similar services? Does that depend on whether it connects to the PSTN? What if it doesn’t need the PSTN, or is used in an integrated services environment? Is Microsoft holding itself out as a common carrier? If the service is free, does it contribute anything to universal service funding? Is it an eligible telecommunications carrier for purposes of USF support? Where does responsibility rest? With Microsoft? With the owner of the underlying transport facilities? How is that to be determined?

This is a specific case of a service which confounds easy categorization. It will then be generalized to the larger issues regarding value-added services and IP-enabled services in general. Some directions for the future will be suggested.

REGULATORY IMPLICATIONS OF “UNIFIED COMMUNICATIONS”:

WILL MICROSOFT BE THE WORLD'S BIGGEST PHONE COMPANY?

*"Today we are taking the magic of software and applying it to telephone calls."
Bill Gates, Oct. 16, 2007*

1.0 BACKGROUND

1.1 The landscape of voice communications has been drastically altered by the advent of voice services over the Internet commonly referred to as Voice over Internet Protocol (VoIP). The traditional concept of "telephone service" is being replaced by a multiplicity of voice-enabled IP applications. Personal communications are moving from voice-only to multiple integrated services, and from geographic to non-geographic connections. The emerging IP-based model is user-centric, not network centric, and is driven primarily by software, not hardware.

This paper looks ahead to a time in which the primary service to residential and business customers will be the provision by one or more facilities-based carriers (wireline and wireless) of "broadband" access to the public Internet. It is widely predicted that such VoIP-type communications will progressively replace traditional telephony. VoIP, however, will be "just another application on an all-purpose data network".

Traditional "telephone" service was based on a single-purpose network using a dedicated circuit to provide voice communications between calling parties. VoIP, on the other hand, is an Internet application no different than e-mail or Internet messaging or video. IP is a "universal transport protocol that supports voice, video and data, and all service provider networks lose their distinction." Whether they were originally telephone, cable, data, satellite, powerline or other, wired or wireless, they all become functionally equivalent bit-transport "pipes".

The question at hand is, what is the impact of this on regulation of "voice" communications? It appears that, whether or not the regulation of VoIP and voice-enabled services is "inevitable" is not a technical question but a political one. Does it make sense to try to define some arbitrary set of product attributes over IP as "telephony"? Or would achieving the public policy goals implicit in the rules for traditional telephone regulation (see below) require a vastly more far-reaching extension of regulation into a world in which "voice" and voice-enabled services have become merely one more standard feature of a multitude of broadband packages and applications? (Bach)

"Telephone" common carriers, regulated under Title II of the Communications Act, have certain federal and state statutory and regulatory obligations, including, among others:

- Charging just and reasonable rates
- Filing tariffs
- Non-discrimination

- Interconnection
- Interoperability
- Access to emergency services
- Caller location identification
- Assistance to law and national security authorities
- Disability access support
- Universal service support
- Protection of Customer Proprietary Network Information
- Participation in a regional geographic numbering plan
- Providing for number portability between carriers
- Directory services
- Data retention
- Quality of service
(Bach)

For the reasons discussed below, it is not clear how and under what conditions Internet-only voice-enabled services, including so-called “Unified Communications,” will be subject to some or all of these requirements. The public policy goals, however, remain.

1.2 New Players Enter Market

The implementation of “voice” on the Internet appears to be a process in four stages. The first stage was the introduction of point-to-point voice call technologies and the emergence of businesses holding themselves out to the public as providing services similar/equivalent to those of telephone companies.

Other than for a few lab-type experiments, public voice over the Internet began in 1995, as a hobby for some people in Israel who were only able to communicate by computer. Later that year, the first company to put a VoIP product on the market was Vocaltec. It released Internet Phone Software, which, in combination with a home computer, sound card, speakers, microphone and modem, allowed users to make a phone call over the Internet. However, the users on both ends had to have the same setup, and sound quality was much less than on a normal phone.

By 1998, entrepreneurs began to recognize the potential of the technology and soon computer-to-phone and phone-to-phone connections (still using a computer for the transmission) were possible for making voice calls over the Internet. The service was available using a phone at a provider's location in North America only. It required the users to listen to an advertisement at the beginning and end of each phone call, but in exchange their long distance calls were free.

Businesses began to use VoIP over their intranets to help communicate within their company. But with the introduction of switching equipment in 1998 by 3 manufacturing companies, the story of VoIP took a turn towards the future. Now it could become more readily available to users at home instead of at a specific facility belonging to the pro-

vider. By the year 2000, more than 3% of voice calls were being made over the Internet using VoIP.

This was followed by the emergence of VoIP services companies such as Vonage (founded in 2001), Skype (2003) and many more, offering a range of services primarily focused around voice, and raising the question of their relationship to traditional telephone service (a substitute? a complement?). The regulatory implications of this are discussed further below.

The second wave of voice enabled services involved the entrance of new, large players who were interested in having voice functionality, but not necessarily to offer “voice” as a separate service, but to combine it with other capabilities as part of a more integrated offering. For example:

- e-Bay purchased Skype
- AOL (VoIP and Messaging) (AIM Call Out)
- MSN/Yahoo (pending) (Yahoo Messenger Voice)
- Google (Google Talk)

The third wave is the emergence from major companies of services, initially directed to the enterprise market, that combine multiple communications services seamlessly from the desktop or an IP enabled headset or handset. These are generally described as “unified communications” or “integrated communications.” Given the number of people who either primarily or partly work at home, these can be expected to appear in the residential market as well.

The fourth wave is the emergence of voice as an embedded application in practically every Internet application in which humans contact each other, as well as in human to device applications. This includes e-commerce, games, Web 2.0 social networking sites, personal web pages, etc.

1.3 Incumbents Shift Emphasis

Traditional telephone carriers are very conscious of these developments, but are stretched as the value of the use of their networks migrates to applications, value added services and content over which they have little or no control as carriers. Accordingly, it makes sense for them to reimagine their business model and find new sources of revenue, seeking the benefits of two-sided markets, advertising and various services. But the more direct path for them to do this is to move upstream and acquire popular Internet destinations and services. One advocate of this is Sun Chairman Scott McNealy, who has said that, “Telecommunication companies need to go beyond just providing bandwidth and look into acquiring Internet destination sites that are heavily trafficked.” (McIntosh)

“I have explained to every telco that either you become a destination site, or the destination site will become a telco.” “Internet destination sites are already gaining on telecommunication companies”, McNealy said, giving as examples eBay integrating Skype's

VoIP technology and Google trying to buy wireless spectrum and help build cables across the Pacific Ocean. Microsoft's attempted acquisition of Yahoo would create another behemoth that could compete with carriers, such as by combining Microsoft's technology with Yahoo's existing VoIP and messaging services. (Shah)

This squarely raises the question of the regulatory status of such services. For instance, should eBay's acquisition of Skype draw eBay into the regulated telecommunications arena? What is the logical difference between an eBay bidder and eBay seller communicating via email, Instant Messaging, or VoIP? The communication is traversing the Internet in an equivalent manner and the same information is being exchanged. Can the fact that one communication is oral as opposed to written be a rational justification to apply regulation? eBay purchased Skype not because it wants to be a telephone company, but because it wanted to voice enable its auction site. Similarly, many more things are soon going to be voice enabled through VoIP.

Voice enabling technology is becoming very inexpensive and very pervasive. There are innumerable possibilities for the application of voice enabling technologies and eventually the line between "public voice telephony" and "voice enabled applications" breaks down. It is at that point that regulators must consider whether their desire to regulate specifically "voice" services bumps into regulation of other Internet applications or IP enabled devices.

2.0 REGULATION OF VOIP

2.1 Background

Driven by the potential threat of Internet voice products like those of Vocaltec, on March 4, 1995, the America's Carriers Telecommunication Association filed a Petition for Declaratory Ruling, for Special Relief, and for Institution of Rulemaking Proceedings, asking the FCC to assert jurisdiction over the Internet, including software products that permit "free" long-distance calling, which, it asserted, were not in the public interest. The FCC deferred an official response, but eventually made it clear that it did not believe its jurisdiction extended to boxed software packages.

The FCC first reported on VoIP services in its 1998 Report to Congress, in which it found that IP telephony blurred the line between telecommunications and information service. Six years later, in February 2004, it adopted its first Notice of proposed Rule Making (NPRM) regarding the legal and regulatory framework for IP-enabled services, including VoIP (this proceeding is still pending). It is fair to say the FCC has adopted a very measured approach to this topic.

The primary underlying issue is seen as the question of whether Internet-based voice services come under Title I (as "information services") or Title II (as "telecommunications services") of the Communications Act. The VoIP industry favors an information services classification which would exempt VoIP from regulation unless the FCC acts pursuant to its ancillary jurisdiction under Title I of the Act. Title I jurisdiction would allow the FCC

to impose regulations only where it has subject matter jurisdiction of the service to be regulated and where the assertion of jurisdiction “is reasonably ancillary to the effective performance of [its] various responsibilities.”

Alternatively, the FCC could find that VoIP falls within the second category, as a telecommunications service subject to regulation under Title II of the Act*, typically applicable to providers of voice service. Title II imposes direct common carrier requirements on voice providers, such as the obligation to provide service on demand, at rates that are just and reasonable, without unreasonable discrimination or undue preference. (Endejan)

2.2 Emergence of Ambiguous FCC Policy Towards VoIP

2.2.1 Pulver

In In the Matter of pulver.com, the FCC concluded in February 2004 that this company’s Free World Dialup (FWD) application was an unregulated “information service” subject to the FCC’s jurisdiction. The Pulver decision involved an Internet application (FWD) that facilitated the broadband transmission of data between two end-users without ever touching the traditional, circuit-switched telephone network. Although it concluded that the service was not a “telecommunications service” subject to the heavy hand of traditional regulation, the FCC did find that the service was an “information service” over which it could, in the future, exercise its “ancillary” jurisdiction. (Endejan)

2.2.2 AT&T

In April 2004, the FCC refused to find that an AT&T phone-to-phone IP telephone service should be removed from Title II regulation. That service converted circuit-switched long distance traffic into IP packets and then routed them across the country, converting them back into circuits for termination on the recipient’s circuit-switched voice connection at an identified location. AT&T used its Internet backbone to route these calls, which were treated in all other respects as traditional circuit-switched calls.

The FCC ruled that “phone-to-phone” services are “telecommunications services” and, thus, subject to the interstate access charge regime applied to long-distance services generally, even if the communications are transmitted by means of IP-protocols for some portion of their transmission. The AT&T Order concerned a fairly obvious attempt to avoid access charges through the simple expedient of touching an IP network. (Endejan)

2.2.3 Vonage

In November 2004, the FCC moved towards answering this question when it pre-empted the ability of the state of Minnesota to apply its traditional telephone-utility regulation to Vonage’s IP-telephony service. In its Vonage Order, the FCC ruled that Vonage’s DigitalVoice services, as well as similar services such as those offered by cable companies, could be regulated only at the federal level because those services were not, and could not be, limited to the geography of a single state. However, it declined to classify an inter-

connected VoIP service offered by Vonage as either a telecommunications or information service. (Endejan)

2.2.4 Madison River Communications

In March 2005, the FCC adopted a consent decree that concluded an investigation into whether a small telephone company had blocked its customers' ability to use VoIP services. The company agreed to pay a small fine and that it "shall not block ports used for VoIP applications or otherwise prevent customers from using VoIP applications." This decision, although seemingly small, set a very important policy precedent that incumbent voice carriers could not arbitrarily discriminate against competing VoIP carriers using the Internet. (Bach)

2.2.5 Other Regulatory Policies

Notwithstanding its avoidance of a final decision on the Title I/Title II issue, and decisions which seem to lean towards Title I status for VoIP applications, the FCC has imposed some aspects of Title II regulation on VoIP services, where the end-user service is the equivalent of traditional telephone service. For instance, the FCC has ordered all interconnected VoIP providers to ensure that their users are able to reach local emergency centers when making E911 calls. The Commission has ordered interconnected VoIP providers to make contributions to the federal Universal Service Fund, because they increasingly compete with analog voice service providers which also contribute to the USF.

In 2007, the Commission extended Title II Customer Proprietary Network Information obligations to interconnected VoIP providers. The Commission also extended the disability access requirements of Sec. 255 of the Act to providers of VoIP services and to manufacturers of specially designed equipment used to provide these services. In addition, this order extended the telecommunication relay services requirements to providers of interconnected VoIP services.

Most recently, the Commission extended local number portability obligations to interconnected VoIP providers to ensure that their customers may port their NANP telephone numbers when changing telephone providers. All of this has been done by the FCC using its "ancillary jurisdiction" under Title I.

In addition, the Commission also has imposed requirements under the Communications Assistance for Law Enforcement Act (CALEA) upon VoIP service providers, relying on the language of CALEA to find that CALEA's definition of telecommunications carrier was sufficiently broad to cover VoIP providers. The CALEA definition is somewhat different and arguably broader than that in the Communications Act.

The FCC has suggested a list of functional and economic factors to be considered in applying the definition of telecommunications and information services to decide which category is appropriate in a given case. Those factors include:

- Functional equivalence to traditional telephony
- Substitutability
- Interconnection with the Public Switched Telephone Network (PSTN) and use of the North American Numbering Plan
- Peer-to-Peer Communications vs. network services
- Facility Layer vs. Protocol Layers vs. Application Layer (Bach)

However, it seems clear that the most significant factor of all is whether or not the VoIP application interconnects with, and uses, the PSTN and the associated numbering system. Services that do so subject themselves to a considerably higher degree of regulation. Services that are software-driven and strictly computer-to-computer and do not touch the PSTN appear at this time to have the benefits of “information service” status, and are arguably (and there are arguments) not subject to any of these rules, and, if located outside the U.S., may not be subject to the U.S. FCC’s jurisdiction at all. This, of course, will present a problem if broadband Internet service becomes the dominant means of delivery and the PSTN recedes or is converted to IP. The best current example of this is the VoIP service called Skype.

2.3 Skype

Skype is a VoIP provider that emerged in 2003 and offers service based on proprietary peer-to-peer software. eBay acquired the company in 2005 for \$2.6 billion, plus an additional \$1.5 billion if certain goals were met. Using peer-to-peer technology for its basic service, Skype voice packets are routed by the combined users of the free desktop software application, thus avoiding transit via central servers. Skype currently is used by approximately 275 million users worldwide.

Generally, other VoIP providers rely on central servers to handle the traffic. Skype’s peer-to-peer solution not only avoids increasing the processing power at the center of the network, but as the number of users grows, its processing power increases with the size of the network. This means that the network can scale very easily to large sizes without investing in a complex and costly centralized infrastructure.

The basic Skype P2P software allows free computer-to-computer services, including speech, instant messages and file transfer via the Internet, i.e. ‘free’ means that the user must have a flat-rate Internet connection. Skype’s paid services, SkypeOut and SkypeIn, allow users to respectively call other users and non-Skype users via regular PSTN or mobile networks, and to receive calls on their computers dialed by regular phone subscribers to regular phone numbers. (ITU, “Skype”)

Under certain circumstances, peer-to-peer technologies such as Skype can be blocked in whole or in part, either as “traffic management,” for regulatory reasons, or as a defense by an incumbent against competition. For example, Verso Technologies offers a "carrier-grade applications filter" that claim to be able to block so-called bandwidth drains such as

Skype, P2P messaging, streaming media, and instant messaging. Because of its P2P design, figuring how to measure and block Skype has been a significant challenge, and the application has been difficult to measure. (Mohney)

2.4 Security Implications

2.4.1 CALEA

In 2004, the Justice Dept., FBI, and Drug Enforcement Administration delivered an 83-page petition to the Federal Communications Commission demanding dramatic new surveillance powers. If approved, the FBI would have had the right to require Internet service providers (ISPs), voice over Internet protocol (VoIP) companies, and others that rely on broadband access to the Net to redesign their networks to support standards designed by law enforcement for wiretapping and tracing. Most of these recommendations have not been adopted, but continue to be put forward (see “Afterword,” below). (Economist)

The FBI can already require telephone companies to assist them under the 1994 Communications Assistance for Law Enforcement Act, better known as CALEA. CALEA's goal is to help law enforcement keep pace with changes in telecommunications technology. Today's challenge is how to address calls made over the Internet via peer-to-peer networks such as Skype.

The US government has been enforcing signal interception (wiretapping) requirements on interconnected VOIP service providers which require them to allow VOIP communication to be tapped by government authorities under the Communications Assistance for Law Enforcement Act (CALEA) in a similar way to what is already done with the regular telephone network. Skype (headquartered in Luxembourg) has been very discrete about this topic, and has not stated specifically whether it will comply with the rules, or in fact even if it is technologically possible for them to do so. This is made more opaque because of the jurisdictional issue over a European-based company.

Skype-type services could not be more poorly suited to wiretapping. All calls are encrypted and the calls themselves never go through a centralized server. Skype's VoIP system uses encryption keys that are generated by the calling parties and pass to one another during the call session. The encryption keys do not pass to anyone else other than the callers involved. A centralized certificate authority confirms that the parties are who they say they are, but has nothing to do with the encryption of the calls themselves. This is a very difficult system to incorporate a reliable wiretapping system into, and creating the technology to do so could prove very costly. (Hot VoIP)

Such a peer-to-peer system also doesn't have a centralized method for keeping track of calls. That means it can't detect when a wiretap target is actually making a call. The firm cannot provide investigators with access to suspects' calls, since it does not handle any of the traffic itself. And even if investigators intercept a Skype call by tapping a suspect's Internet connection, its strong encryption means they are likely to be able to determine only the time and the duration of the call.

The FBI has reportedly been pressing Skype to build a special backdoor into its software for lawful-intercept purposes, but so far it is not known to have complied. Skype's cryptic position on lawful intercept is that it "co-operates fully with all lawful requests from relevant authorities", but since it is based in Europe it could argue it is not subject to the recent extension of CALEA. It is believed that Skype, which controls the underlying encryption algorithm may have the capacity to decrypt calls, or enable others to do so, should they choose to do so.

2.4.2 Zfone

Meanwhile, the technology continues to evolve. Phil Zimmerman, the programmer who developed "Pretty Good Privacy", a popular and highly secure encryption algorithm, is now working on a free VoIP product called Zfone. Its scrambling system promises to be even more opaque to wiretaps than existing encryption techniques. That will be good for anyone who wishes to keep their communications secret. But it will be more bad news for investigators trying to listen in. (Greenberg)

According to its website, Zfone is a new secure VoIP phone software product which lets a party make encrypted phone calls over the Internet. Zfone uses a new protocol called ZRTP, which, it says, has a better architecture than the other approaches to secure VoIP.

- Doesn't depend on signaling protocols, PKI, or any servers at all. Key negotiations are purely peer-to-peer through the media stream
- Interoperates with any SIP/RTP phone, auto-detects if encryption is supported by other endpoint
- Available as a "plugin" for existing soft VoIP clients, effectively converting them into secure phones
- Available as an SDK for developers to integrate into their VoIP applications
- Submitted to IETF as a proposal for a public standard, and source code is published

3.0 "UNIFIED COMMUNICATIONS"/INTEGRATED COMMUNICATIONS

3.1 Concept of Unified or Integrated Communications

Unified Communications and Collaboration (UCC) is the convergence of collaboration software such as e-mail and IM (instant messaging) with communications products such as VOIP (voice over IP). The idea is to marry traditionally walled-off productivity applications to improve the way workers collaborate with each other, partners or customers. The global market for UCC-type products, which blend all forms of real-time communications, is estimated to be US\$17 billion by 2011. (Greene) These products are directed initially at the enterprise market, but given the number of people who work completely or partially at home, it is reasonable to expect they will impact residential use as well.

3.1.1 Microsoft

Microsoft has for some time offered a voice-enable application called “Net Meeting.” UCC builds on and expands that base. According to Bill Gates, “A fundamental reason that communicating is still so complex is the fact that the way we communicate is still bound by devices. In the office, we use a work phone with one number. Then we ask people to call us back on a mobile device using another number when we are on the go, or reach us on our home phone with yet another number.”

People have different identities and passwords for their work and home e-mail accounts and for instant messaging, he said, noting that this would all change in the very near future. “A new wave of software-driven innovations will eliminate the boundaries between the various modes of communications we use throughout the day. Soon, you’ll have a single identity that spans all of the ways people can reach you, and you’ll be able to move a conversation seamlessly between voice, text and video and from one device to another as your location and information-sharing needs change,” he said. (Galli, “Gates Trumpets”)

Standardized, software-powered communications technologies will be the catalyst for the convergence of voice, video, text, applications, information and transactions, making it possible to create seamless communications continuum that extends across peoples work and home lives,” he said. “Microsoft is taking its software and applying it to phone calls.”

“This represents the shift that is taking place in this industry,” said Jeff Raikes, President of Microsoft’s Business Division, predicting that over the next three years more than 100 million people will be able to click-to-communicate”. “In 10 years from now when you see a desktop phone in a movie, you will remember the days when you had one of those on your desk,” Gates said. (Galli, “Microsoft Ushers”)

More than 50 partner announcements were made in conjunction with Microsoft’s introduction of its new UCC services. Seven manufacturers announced global availability of 15 new Microsoft UC-qualified phones and devices. Also, Microsoft is working closely with more than 15 strategic partners to develop new UC-enabled endpoints including handsets, wireless phones, web cams and laptops. Microsoft also unveiled Unified Communications Open Interoperability, a telephony system qualification program, to give customers the assurance that Microsoft unified communications software works with their telephony systems.

“Customers can deploy Office Communications Server and Communicator with the infrastructure they have – with IP telephony that they might have from one of those vendors – or they can deploy it in conjunction with an IP PSTN gateway,” he said. Though Microsoft is working with vendors on VoIP, there is some belief in the industry that the company eventually will look to provide the entire software infrastructure for VoIP and other communications offerings.

Dell is partnering with Microsoft and Nortel Networks to bring a unified communications platform to its line of hardware, while providing an additional layer of services for customers. The agreement with Microsoft and Nortel—those two companies already have an interoperability agreement—will now allow Dell, of Round Rock, Texas, to offer its customers a range of unified communication products that work with its PCs and servers, while also expanding its portfolio of services.

The agreement with Microsoft, Becker said, will allow Dell to offer a combination of different unified communications products—such as e-mail, fax, instant messaging and VOIP (voice over IP)—to its customers. The user can choose one of four different packages or combine all four, he said. The four packages of unified communications products Dell and Microsoft are offering include: Core Office Communication Server, which provides IM and Microsoft's Live Meeting; OCS Telephony, which offers routing tracking and management, a VOIP gateway and PBX (public branch exchange) integration; Audio and Video Conferencing, which allows video and VOIP conferencing; and Exchange Unified Messaging, which provides voice mail, e-mail and fax through Microsoft Outlook.

3.1.2 IBM

IBM officials said the company is going full bore into UCC in 2008 and beyond, recognizing estimates from IDC that project the market will top \$17 billion by 2011. IBM is ramping up its growth in UCC to meet challengers such as Microsoft, which launched its Windows-based Office Communications Server 2007 last year, and more traditional telecommunications vendors such as Nortel Networks, Avaya and even networking giants such as Cisco Systems.

In April 2008, IBM has unveiled its new Lotus Sametime Advanced software and pledged to invest \$1 billion to fortify its unified communications and collaboration strategy in the next three years through acquisitions, internal development and new services. (Boulton)

Lotus Sametime Advanced integrates social networking profiles from IBM's Lotus Connections suite to help corporate workers more quickly reach out to colleagues or experts to answer their questions. The software also includes features persistent group chat and instant screen-sharing capabilities to facilitate continuous, threaded conversations, said Bruce Morse, vice president of unified communications software for IBM Lotus.

Sametime, which IBM launched in 1998 as its core corporate instant messaging and Web and video conferencing client, forms the cornerstone of IBM's UCC strategy. Bank of New York-Mellon, Celina Insurance, Colgate Palmolive, HSBC Bank, and Prudential UK all currently leverage Sametime to deliver telephony and audio and video conferencing, along with IM, group chat and Web conferencing to their employees.

"It's a key and very deep IBM differentiator that we address all of the server-side function for carrier-grade, high availability, first-traffic management, failover, low-latency things

that are very challenging by way of infrastructure," Mills said. The company also said it will facilitate UCC software and services from desktops and laptops to smart phones and other mobile gadgets and services from RIM, Apple, Sprint-Nextel and Symbian.

IBM's UCC strategy comes with a nod toward the future. Company officials predicted that in five years UCC will play a major role as corporate employees continue to work out of their home offices, where click-to-call and other tools to enable business processes will be employed. Moreover, IBM expects open interoperability across business and public domains, with industry standards coalescing around UCC.

To plan for this, more than 70 engineers from eight IBM Research labs around the world are currently cooking up several software projects that will leverage UCC. Their focus areas include social software, interactive visualization, virtual worlds and accessibility. (Boulton)

3.1.3 Other Voice-Enabled Applications

3.1.3.1 Gaming

Online gamers have for some time (since 1998) had available the ability to communicate in-game in text through the use of Internet Relay Chat. More recently, a variety of games and services embodying voice capability have appeared. This has been extended to the popular game platforms PlayStation and X-Box. PlayStation has adopted Skype to meet its users communications needs. (Karoupas)

3.1.3.2 Web 2.0 Social Networks and Virtual Worlds

The web is evolving into a social environment. People like to speak to each other. According to Ifbyphone.com, at present the web does not cater to this basic human need. They believe that seamless integration of telephony with web and existing 2.0 content is inevitable.

Social networking sites have huge numbers of users requiring a more natural form of communication within the context of their online environment. It is their hope that innovative application of technology and an approach tailored to the requirements of each individual website, will enrich users online experience with instant, immediate person-to-person speech, within their web-browser.

Ifbyphone believes that as people adopt new technologies they change their daily routines, creating new opportunities for business and social interaction. Facebook, LinkedIn, MySpace, and Second Life are becoming increasingly important, now generally accepted as a vehicle for everyday communication. People are working and playing in online environments all the time, collaborating and networking via a wealth of social media and networking websites. However, verbal communication is strangely lacking within the context of these online meeting places, despite the fact that these people are here because they have something to say to each other. To date the Internet has failed to find its voice.

Their aim is build upon the successful social environments already in the public domain and work to seamlessly add that vital missing dimension -- real-time person-to-person speech, opening up the virtual worlds to new levels of discussion and debate.

Other applications which include voice are multimedia conferencing applications, webcams, PDAs and WiFi enabled cell phones, voice-enabled public kiosks and VoIP “widgets” which can be dropped into almost any website. There are also software applications which mesh VoIP applications with the mobile telephone network such as Fring and Truphone. (Martin)

4.0 CONCLUSIONS

From the foregoing, it seems clear that, in a universally broadband-connected future, a backward-looking policy which attempts to regulate voice on the Internet as if it were “telephony” is unlikely to succeed:

- It makes no sense from a technical point of view
- There are/will be too many diverse voice-enabled IP applications
- Doing so would likely negatively impact the opportunities in the UCC market
- There is no rational way to draw lines between various voice-enabled services
- Arbitrary line drawing will affect adjacent services
- Encryption makes it of limited value (although information about the message may be of great value)
- Attempts to regulate all voice-enabled would adversely affect other integrated applications
- Jurisdiction is uncertain over non-U.S.-based enterprises

It makes little sense in a multi-services communications environment to distinguish integrated voice (including VoIP) as a service needing to be treated with a distinct set of policy, legislative and regulatory provisions. (ITU, “What Rules”) That said, however, the absence of classic telecommunications carrier regulation may thwart important public policy, law and national security goals affirmed by Congress and the states.

The FCC has been temporizing (especially with the IP-enabled Services proceeding) until more facts were available and conditions were ripe for Congress to provide new direction. That time is upon us. What is the pathway to a solution?

What is needed is for Congress to enact a comprehensive piece of legislation which recognizes “broadband” (appropriately defined) as the standard service offering, and creates a new national regulatory policy, regime and jurisdictional grant to the FCC within the context of a national information plan. A guide for regulation would be to adopt as a principle the proposition that the responsibility for implementing public policy goals must lie with those in the best position to do so, whether they are local transport facilities, Internet Access Providers, Internet backbone carriers, Internet applications providers, or software providers. This could potentially sweep in for some limited purposes activities and enterprises not traditionally subject to FCC regulation, even under “ancillary” juris-

diction (including, for example, Microsoft, Google, eBay, World of Warcraft, MySpace, etc.).

These obligations would relate back to the current types of requirements listed in section 1.1, above, and only as necessary for the protection of the public health, safety and welfare, and the national security, not to the advancement of private economic interests. Most of the burden would likely fall on the facilities based carriers and ISPs, but companies providing VoIP. Incremental costs could either be built into their rate system, or, if Congress thinks appropriate, compensated by public funds, tax benefits, etc. At the same time, there would have to be strong privacy protections, to the extent the Congress and courts can make and enforce them against the claims of the Executive*.

The balancing of technical feasibility, security and privacy in a broadband environment will create a regulatory regime more far-reaching than ever before, but providing less than the reach desired by regulators, police and security authorities. The alternatives seem to be to abandon vital public interests, or to create a regime so draconian as to shock both citizens and the Constitution.

Afterword

FBI Director Mueller has stated before Congress that the FBI wants the general ability to “pre-empt” illegal activity on the Internet, leading to the conclusion that his desired solution is the placement of permanent, real-time “back-doors” located at multiple “choke points” on the Internet. He floated the idea that perhaps ISPs and/or carriers could get actual or implied consent from all of their customers for continuing packet inspection by including it in their terms of service. He noted with approval the ongoing EINSTEIN program on federal government networks designed to achieve this end. (McCullagh, “FBI’s Net”, “Transcript”)

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