



# Voice over IP

Legal and Regulatory Issues

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# VoIP: Legal and Regulatory Issues

## Introduction

As MOREnet and its customers begin to evaluate Voice over IP (VoIP) technologies as replacements for traditional phone systems, there are a number of legal and regulatory issues that must be addressed. In Missouri, telecommunications services are regulated by a number of organizations that all have their own jurisdictions and regulations. MOREnet has investigated the ramifications of using VoIP technologies in Missouri for three major categories of uses:

- The individual organization (regardless of the number of locations).
- MOREnet as an integrator and enabler between organizations.
- MOREnet as a supplier of long-distance services via VoIP.

Note that this is research only—there are no services being offered by MOREnet in any of these areas.

The issues that were originally envisioned were regulatory—restrictions based on MOREnet's status (as part of the University of Missouri, a state land-grant public education institution). Regulatory control of telecommunications in Missouri is exercised by two organizations: the Federal Communications Commission (FCC) on a federal level and the Missouri Public Service Commission (PSC) on a state level. In addition, other regulations that could affect a VoIP service were state statutes and University regulations.

Legal issues centered around the telephone companies and what challenges they might make to MOREnet entering the long-distance service and perhaps even the integrator areas. Since many telephone companies are notorious for legal challenges and wrangling, whether meritorious or simply as a delay tactic, evaluating the risk of such a legal challenge was also important.

## Background

Many organizations today have a Private Branch Exchange (PBX), which provides phone services to the organization independent of the phone company. This is done for two reasons: first, the PBX offers features that the phone company cannot (such as intercom, transfer, Do Not Disturb, call forwarding, voicemail, etc.)<sup>1</sup>, and second, costs (the company may have 1000 employees, each with a phone, but only 50 may need a phone line at any one moment<sup>2</sup>). With the use of computers in PBXs to control features, the change to digital telephony began, spurred by ROLM, which introduced the first all-digital PBX in 1975. In addition to PBX systems, there were "key" systems, which required either an operator to manage incoming calls or for individuals (generally receptionists) to have "button fields"<sup>3</sup> to manage calls.

During the 1970s, large companies would build private networks to carry voice and data traffic between locations. The PBX enabled an individual user to dial directly between locations on the private network as well as to the public network. In addition, many systems were designed to allow a user in New York, for example, to not only call a colleague in Chicago toll-free over the corporate network, but to be able to call anyone in Chicago through the Chicago office PBX. This type of service is known as toll-bypass, as the callers are "bypassing" the toll voice network (ATT, MCI, etc.) and using the company network, saving on toll call charges.

After deregulation in 1983, toll charges began to drop, and the private voice network began to lose its value to small- and mid-sized companies. However, the rise of the Internet in the 1990s saw a number of early initiatives for toll-bypass services, including The Phone Company's Remote Printing Service<sup>4</sup>.

As phone service became cheaper, and PBX systems dropped in price while adding features, more and more organizations began to install phones everywhere. As these organizations spread out over the country, inter-office calling over the toll network was costing them a fair amount of money, so they moved to private voice networks at a fixed cost between sites. Coupled with this was the rise in data connectivity in the 1990s, fueled by the

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<sup>1</sup> Excluding Centrex service, which is essentially a pseudo-PBX owned and operated by the telephone company, but providing PBX-like features.

<sup>2</sup> Why buy 1000 lines when you can buy 50 and let the PBX manage them? The PBX allowed for a few "trunk" lines to service many "phone" lines, trading a one-time cost for the PBX for lower monthly phone bills.

<sup>3</sup> A "button field" is a phone with many line buttons for all the phones and lines connected to the system. Also referred to as a "key field", these instruments allowed an operator to see what outbound lines were in use as well as which phones.

<sup>4</sup> See <http://www.tpc.int> for details. TPC began as an "Experiment in Remote Printing" in July of 1993. It was the inspired creation of Carl Malamud of the Internet Multicasting Service and Marshall Rose, of Dover Beach Consulting.

increasing use of computers. Terminal connectivity back to the home office mainframe was soon replaced by networked PCs, and then Internet connectivity was added to the mix, spurred by the World Wide Web.

In the 1990s, not only did large organizations (including colleges and universities) have PBX systems, school districts were purchasing PBXs and linking school buildings and district offices together. Although some districts chose Centrex services, many districts chose to own and operate their own PBX system. During this time, many college and universities were also expanding to multiple locations, challenging them with connectivity problems also.

Currently, organizations have multiple locations, but want to tie those locations together with both data networks and voice networks. Since ROLM introduced the first all-digital PBX in 1975, phone systems have been moving to a digital format<sup>5</sup>, which sets the stage for VoIP, as the digitization of voice is now done easily and cheaply.

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<sup>5</sup> AT&T and Nortel soon followed ROLM's introduction of an all-digital PBX. Around the same time, standards bodies were working on an all-digital telephone system called ISDN (Integrated Services Digital Network), which was supposed to turn all phone service digital in the late 1980s, but high costs and hard-to-operate equipment has effectively killed ISDN in the US except for niche markets (such as video conferencing), although it was widely adopted in the rest of the world.

## Three Types of VoIP Services

To keep the research and discovery focused, questions and discussions were focused on three major categories of VoIP services that seemed most likely to involve MOREnet:

- The individual organization (regardless of the number of locations).
- MOREnet as an integrator and enabler between organizations.
- MOREnet as a supplier of long-distance services via VoIP.

Although there are other areas in which MOREnet (as well as commercial companies) may offer VoIP-based services, these seemed to be the most immediate in nature and possibility. If the hurdles were too high (or impossible) for these areas, other areas would be out of the question due to dependencies on these categories.

### *The Individual Organization*

For a single-site organization, there are no issues at this time, as the organization is not attempting to bypass toll charges between locations. Even multiple sites within a single calling area (i.e., all calls between sites are local) do not have issues, even if a private voice network is installed between sites to extend PBX services to remote locations. An organization's choice of phone systems is strictly internal, and the issues with selection will be mainly features, price and upgradeability.

An organization with multiple locations that requires long-distance (toll) calls between locations has been the typical candidate for private networks to bypass the toll network. The flat cost of the leased circuit(s) is cheaper than the variable cost of the calls (based on the number of minutes) per month between offices.

Toll-bypass between locations (whether it's 50 miles or 1500 miles) is an accepted practice and is unregulated by the FCC and state PSC as long as the organization uses the facilities only for its communication needs, and does not allow or sell access to anyone else. This includes the user's ability in the Kansas City office to make a call in St. Louis and have it be entirely toll-free, passing the call from office to office over the private network, then the St. Louis office sending the call out to the local phone company to complete.

Although the long distance companies are losing some revenue, they are (in theory) making some of it back based on the leased line running between the remote locations. The key factor in this application is that the organization does not resell access to its facilities (which would make it a "carrier" and then subject to PSC and FCC regulation).

## ***MOREnet as Integrator/Enabler***

As the supplier of IP networking to most school districts as well as a great deal of the public sector (higher education, libraries and state government), MOREnet is in a position to enable and facilitate integration of VoIP services between it's customers.

Enabling VoIP is primarily a function of managing QoS<sup>6</sup> throughout the network. As long as the voice services are not resold, there are no regulatory issues related to MOREnet offering a specific QoS for VoIP traffic between it's customers.

As an integrator, MOREnet could offer ENUM<sup>7</sup> or related services, H.323 gateway and gatekeeper services or SS7<sup>8</sup> translations between the PSTN and the IP networks. Any service offered would be solely for the benefit of MOREnet customers, and as long as voice services were not resold, no regulatory issues apply to this scenario either.

## ***MOREnet as Supplier***

The third option is for MOREnet to become a long-distance supplier through aggregation. This means that MOREnet customers would use the MOREnet network to make all long-distance calls via a VoIP gateway on their premises (either integrated into the MOREnet router or a separate unit). MOREnet would then contract with a long-distance provider to carry the traffic nationwide, and would deliver the voice traffic via a gateway to the carrier (most likely in Kansas City or St. Louis). The cost savings to organizations would come from the volume purchasing done by MOREnet less the cost of installing and operating the VoIP gateway device on the customer premise.

Currently, there are no FCC or PSC regulations regarding the toll aggregation over a VoIP network. This area is and should be monitored, as many ISPs as well as traditional phone companies enter the VoIP market<sup>9</sup>. With more entrants into the service area, regulatory bodies may step in to provide controls and governance in the VoIP market.<sup>i,ii</sup>

In our conversations and research a new issue was brought up that had not been previously identified as a potential issue: taxes. Telecommunications

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<sup>6</sup> QoS: Quality of Service. Methods to control traffic flows to ensure certain packets get priority over others. MOREnet does this through marking Type of Service (TOS) bits and queuing mechanisms in the network routers.

<sup>7</sup> ENUM is a proposed standard for integrating DNS and E.164 numbering to enable VoIP, H.323 videoconferencing, etc. across the IP and PSTN networks. See <http://www.enumf.org> or <http://www.itu.int/osg/spu/enum/index.html>.

<sup>8</sup> SS7: Signaling System Number 7 (SS#7) is the protocol used by the telephone companies for interoffice signaling to provide call control, remote network management and maintenance capabilities.

<sup>9</sup> SBC announced an IP-based Centrex service, due to be available in four cities by late 2002; AT&T announced in 1999 that it would move all voice traffic to the IP network by 2005.

services are taxed at Federal, state, and local levels at different amounts, and the taxing entities are dependent on the tax revenue for operations. By moving toll minutes to VoIP-based services, the taxing entities will lose revenue from both the toll minute charges as well as from a reduction in the number of local circuits between a customer and the telephone company to support these calls. For many organizations, the tax loss from a single customer switching to VoIP is negligible; however, large organizations such as colleges and universities may make a larger dent in the tax revenue to a point that the taxing body may protest the change.

Again, like the PSC and FCC regulatory arena, the taxation issue will need to be watched and evaluated before MOREnet moved into such an offering. Taxation bodies would need to be contacted to discuss the impact and potential future issues. As more voice traffic moves to VoIP-based services, the taxation bodies will likely begin to evaluate how to levy taxes on the services to ensure continued revenue from telecommunications services.

## Conclusion

At this time, there are no legal or regulatory obstacles to MOREnet in developing most VoIP services or offerings. However, with respect to toll aggregation, there is the potential for regulatory oversight in the future, which may have an adverse impact on any offering. In addition, the taxation of telecommunications services will not likely cease, and we should expect that taxing bodies will begin to look at ways to impose taxes on VoIP services, which MOREnet would need to comply with. The combination of regulatory and taxation issues may require accounting and other overhead at a cost high enough that there would be no savings for MOREnet or its customers from such an offering.

If MOREnet begins to evaluate making VoIP services a standard offering, there is no immediate issue; long-distance aggregation will require due diligence in reviewing the regulatory and taxation issues prior to committing to any service offering.

## Additional Information

Federal Communications Commission – <http://www.fcc.gov>

Missouri Public Service Commission - <http://www.psc.state.mo.us>

International Telecommunications Union – <http://www.itu.int>

World Telecommunications Policy Forum on IP Telephony -  
<http://www.itu.int/osg/spu/wtpf/wtpf2001/index.html>

Pulver.com – <http://www.pulver.com>

## Bibliography

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<sup>i</sup> “Is It A Zebra Or A Striped Horse?” Mike Senkowski and Jeff Linder, Legal Times, May 8, 2000 [from <http://www.wrf.com/db30/cgi-bin/pubs/zeb582000.pdf>]

<sup>ii</sup> “VoIP Regulation Looms”, Michael Specht, New Telephony, July 9, 2002 [from <http://www.newtelephony.com/news/175.html>]