VoIP – the New Voice of the Lightwave

By

Clifford R. Holliday
B & C Consulting Services

Abstracted from the author's Report
"Voice on the Lightwave – VoIP; How Will VoIP Impact the Telecom Market?"
Available from Information Gatekeepers, Inc. www.igigroup.com

VoIP is suddenly the most written about, talked about and hyped subject in the telecommunications world. VoIP equipment accounted for as much as 20% of total enterprise voice equipment in 2003. International long-distance on VoIP is growing at about 35%. However, it still is not selling much. That is to say, there really is not a strong telecom market impact yet. The enterprise sales tend to be replacement sales, not incremental. The long distance market is pretty much the same.

In spite of these relatively modest impacts to date, various regulators agree that VoIP is going to have a profound effect on telecommunications. FCC Chairman Powell has seen fit to warn the incumbents (the RBOCs primarily), in an early May 2004 speech, **"You ought to be terrified because we are lowering the barriers to offering a service to which you have a dedicated massive infrastructure."**

A former state regulator recently noted "VoIP is absolutely going to kill institutions we are familiar with. It's going to destroy a lot of the edifices that the old telecommunications regime is built upon. It's going to morph into new things, and the government won't be able to control it." Supporting these ideas of new approaches to come, AT&T's VP of Internet Telephony noted while speaking about the AT&T VoIP offering, "We have a pipeline of exciting new enhancements coming from AT&T Labs."

Types of VoIP

For VoIP to have this threatened impact on the telecom marketplace, network VoIP must take on a significant market share of the residential market. 'Network VoIP' as it is being used in this article (because of the rapidly developing nature of this market, terminology is very unstable) refers to the integration of VoIP with the Public Switched Telephone Network (PSTN).

The other general types of VoIP are:

- Enterprise VoIP that deals with various devices and applications for use of VoIP in business environments,
- PC to PC VoIP that has mostly been a hobbyist application,
- IXCs using VoIP to reduce facility cross-section requirements.

This article will deal exclusively with network VoIP, and particularly the impact on the overall telecom market of network VoIP. While it is clear that there is a great deal of activity in the VoIP area, the market impact of this service offering is not at all clear. This is particularly true of network VoIP.

VoIP Activity

Currently, the number of Network VoIP lines is less than 500,000. However, as to be enumerated shortly, a number of major players including the IXCs, CLECs, cable companies, and RBOCs, are beginning to make major moves in the VoIP area. Voice over Internet Protocol (VoIP) has been around for some time in its guise as a hobbyist pursuit. Lately, it has taken on increasing importance in enterprise access markets. Most recently, advances in technology and recognition of possible market significance are now bringing VoIP to a prominence as a network technology. A multitude of current announcements underlines the rise of its importance:

IXCs

- AT&T began a trial in three states in October of 2003 and has begun service in selected metro areas early in 2004. AT&T plans to offer work-at-home Centrex like services using VoIP.
- Global Crossing reports that as of early 2004 30% of its voice traffic is VoIP, and expects it to grow to 90% by 2006. The existing service is a wholesale offering only. However, Global Crossing is planning to offer an Enterprise service.
- MCI offers MCI Advantage, a VoIP service primarily for businesses. They clearly, however, intend to be major players in the Network VoIP business. They also plan to offer a VoIP based Centrex-like service.
- Sprint plans to offer VoIP on its Frame Relay services.
- Level 3 has been a long time provider of wholesale IXC VoIP services. It has now added Centrex VoIP and has extended the services to the end user.

Telcos

- SBC has begun offering VoIP systems to its business customers. It also offers nationwide VoIP service from a limited number of metro areas. SBC's enterprise VoIP service is called PremierSERV. SBC says it is testing residential VoIP.
- Bell South offers VoIP for small businesses, with network-based VoIP late in 2004.
- Verizon announced in January 2004 that it will begin offering VoIP to its xDSL customers in the first half of 2004.

- Bell Canada has announced a plan to offer VoIP to its corporate clients in 2004 and to offer it to over 90% of its customers by 2006.
- Qwest has announced that it will offer VoIP service in its 14 state service area as an alternative to regular voice service. This is to begin in the first half of 2004.

Cable Companies

- Time Warner has announced that it will role out VoIP access capabilities to over 10 million subscribers by the end of 2004.
- Cox Cable announced its first VoIP service in Roanoke, VA., December of 2003, although it had previously been offering digital-based telephone service in other markets.
- Cablevision began offering VoIP to its entire footprint in the New York area in late 2003.
- Comcast offers VoIP service in 21 states.

The Telecommunications Market and VoIP

The current telecommunications marketplace is characterized by a series of attack/defend situations. Just about all of the major players are in the position of attacking one or more of the other major groups of telecommunications companies (e.g., the CLECs are attacking the RBOCs.) Simultaneously each of the groups is defending its own major markets from a similar attack, often from different directions. VoIP will have a definite role in this series of attack/defend scenarios. Network VoIP will be useful to all groups of players, but it will be most effective for the large CLECs/IXCs (e.g., AT&T or MCI.) It offers them a path to achieve substantial residential market penetration without having to depend on the unstable and expensive UNE-P approach.

The Unbundled Network Element-Platform (UNE-P) has been the vehicle used by the large CLECs (i.e., AT&T and MCI) as their approach to offering local voice without building infrastructure (facilities to the end subscribers.) The use of UNE-P allows a CLEC to offer service in a given market area, with practically no capital investment. It just purchases UNE-Ps from the local RBOC (at a wholesale price) and then starts offering local voice service – using the facilities of the RBOC. This has been the source of a great deal of the loss of primary lines for the RBOCs in the last couple of years.

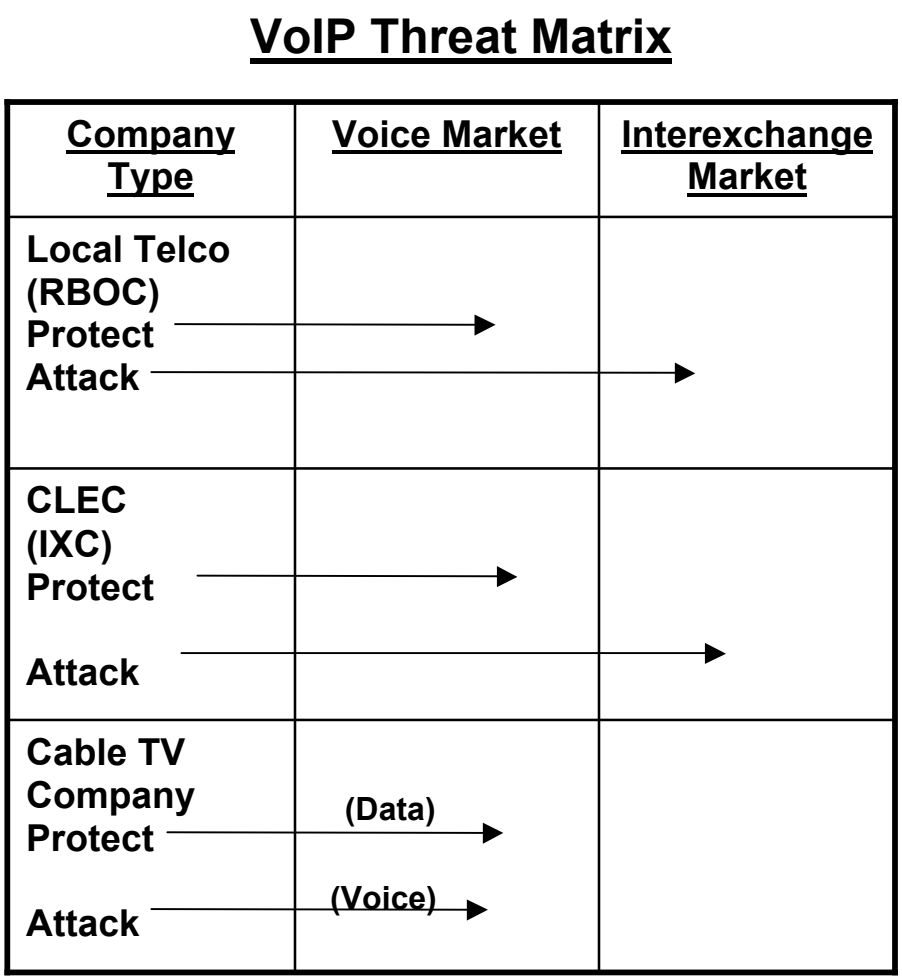
The UNE-P approach is under substantial regulatory and legal attack. Its future is very uncertain. Therefore, from the point of view of the CLECs, there is a great uncertainty as to the continued sustainability of this line of business. In addition, the CLECs still must pay the RBOC the cost of the UNE-P. Even if it is a wholesale cost, it is still a substantial portion of the cost of retail voice service, making it hard to compete with the RBOCs on a price basis.

VoIP offers a way to gain entry to the local voice market, without the deployment of local infrastructure. Therefore, it is viewed as a way to eliminate the UNE-P uncertainty.

Strategic Market Aspects

Having established the nature of the current telecommunications marketplace, we will now try to identify the strategic place that VoIP will have in that market. From the previous diagrams, we can eliminate the fight over entertainment from the VoIP discussion. This will eliminate the consideration of the satellite companies. (Video over IP may later change this, but for the time being, video is not an issue in his market analysis.) However, VoIP does figure prominently in the rest of this marketplace battle. The Threat Matrix for VoIP, thus revised will look something like the following:

VoIP Threat Matrix



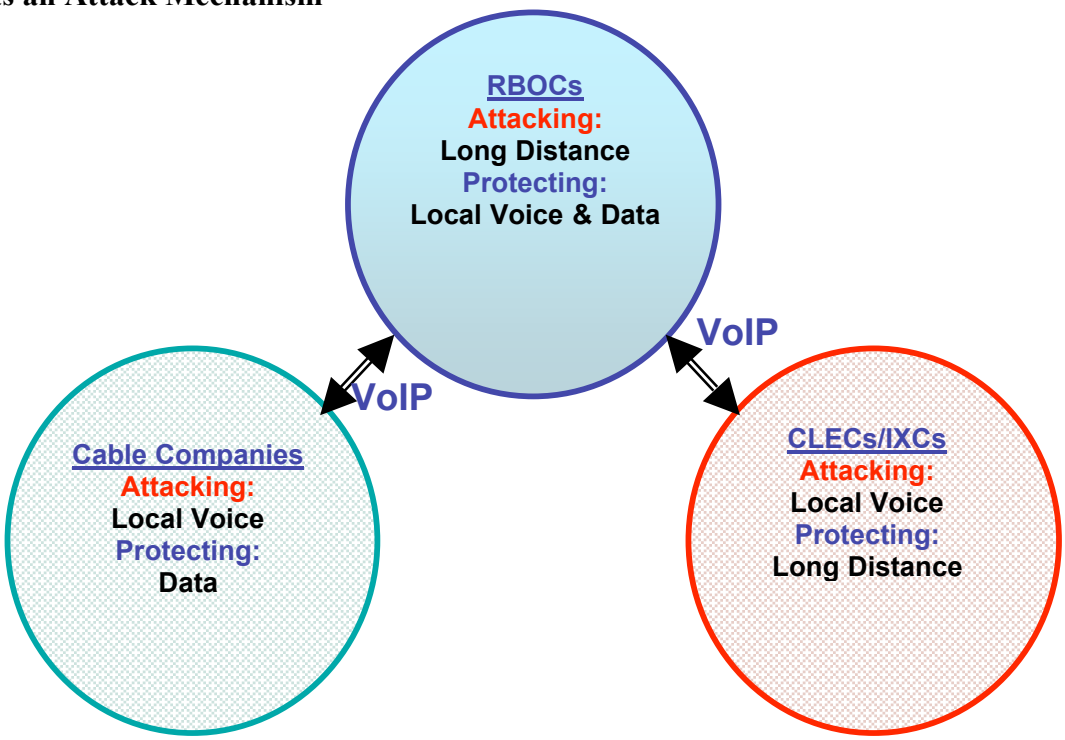
With VoIP, the CLEC can offer voice service to anyone who has a high-speed access line. (VoIP will, of course, work on dial-up lines, but it is a lot more cumbersome and less likely to have high quality.) The customer just needs the appropriate adapter, and a way (a switch or a hub – both simple and low cost) to connect the adapter to his high-speed access line. The high-speed line (which can be an xDSL line provided by the

RBOC or a cable modem provided by the cable company – two thirds are cable modems) will carry the converted voice signals to the appropriate servers on the Internet for call completion; just as it will any other data.

While it may not be clear yet what ultimately the most important market aspect of VoIP will be, it is clear that there will be multiple aspects with strong influences. Among these will certainly be the strategic value of VoIP to the various participants and the associated infrastructure impacts.

VoIP definitely can be a potent weapon in challenging the RBOCs' control of the voice market. It certainly offers a new and unique way for the IXCs and the cable companies to attack these markets. It is exactly the entrée that AT&T has been seeking to get back into the voice business. VoIP is also a convenient way for the cable companies to enter the voice market, and many of them either have, or are in the process of doing so. In fact, the RBOCs appear to be the focal point of a dual attack with VoIP as a prime assault tool. The following illustrates this graphically:

VoIP as an Attack Mechanism



As can be seen the RBOCs are suffering an attack on their bread and butter services – local voice – from both the IXCs and the cable companies. As noted earlier, VoIP can be trained to do many tricks, and some of those will far outshine what POTS can do. An early example of this is the announced service of AT&T (Simple Reach) that allows ten numbers from anyplace in the country to be associated with a single line. What a great and cheap way for small companies to achieve national presence!

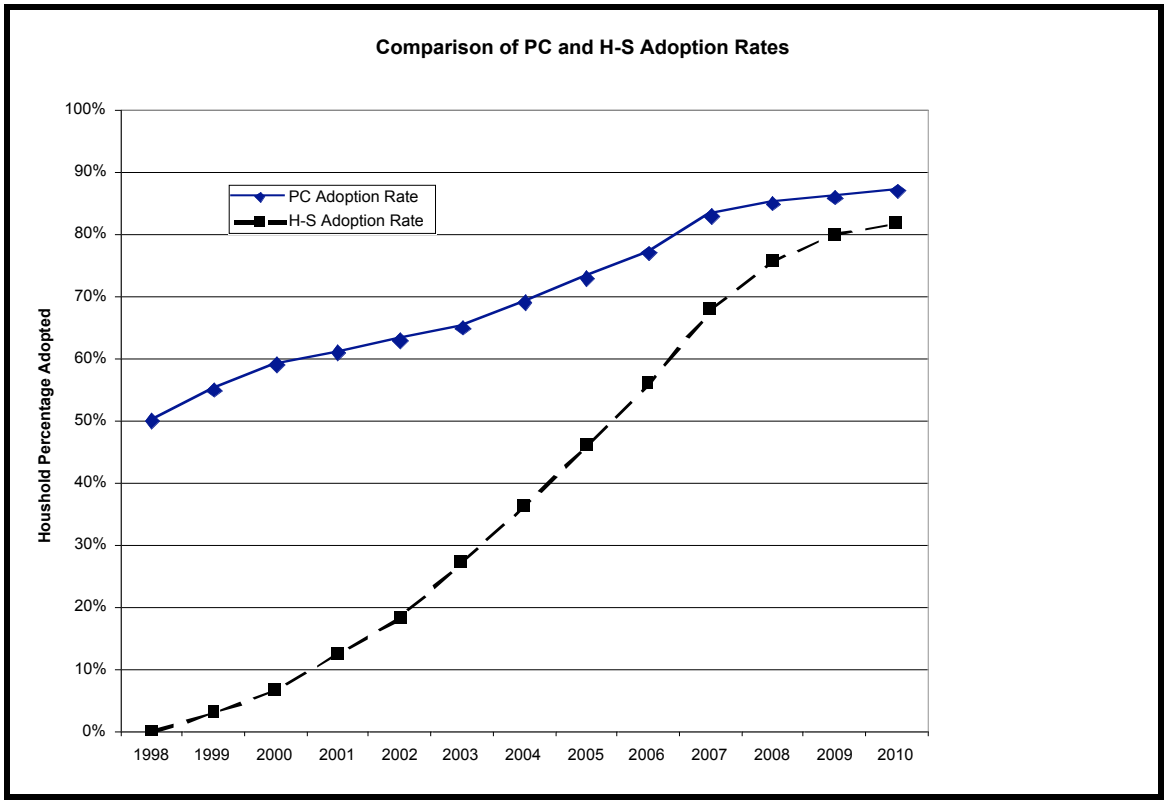
VoIP Forecasting

Forecasting network VoIP is extremely difficult because it is really in its infancy, and because there are a number of 'side issues' that could have major positive of negative impacts. In spite of the difficulty, this report uses a technique of scenario development to come to a most likely forecast for the future of network VoIP. This forecast suggests that by 2010 network VoIP will be serving nearly 20,000,000 households – about 25% of the potential market. (Note that the potential market is defined as those households with high-speed access.) The market value analysis will suggest that the network VoIP market can near a value of one billion dollars by 2010!

A set of factors that is closely associated with VoIP penetration is the pair of computer penetration and high-speed access penetration. The author's forecast for these penetration rates is that they will be very close to the same (both between 81% and 85%) by the end of 2007. As a result, a very high percentage of PCs will have access to high-speed lines by that time. (A secondary impact of this is that there will be very little dial-up.)

The following chart compares the penetration rates (adoption rates) of PCs and high-speed access. It is clear that these are closely related, and that by the end of this decade they will be in a vast majority of US homes. The real significance of this conversion to high-speed access is that it greatly extends the market opportunity for VoIP. In fact, some pundits are opining that high-speed data has found its killer app – voice!

Adoption Rates of PCs and High-Speed Access



The forecast market penetration of network VoIP also suggests major changes in the telecom network. These changes include a move towards IP networks and a move to replace the classical class 5 central offices with soft switches. However, most importantly, as Chairman Powell and others are warning, network VoIP is a significant challenge to the core business of the RBOCs, and it could foreshadow a major reordering of the industry.