

Voice Over IP



By Richard W. Boss

Despite the fact that telephone calls are less expensive today than they were before deregulation, budget conscious libraries still seek to reduce their telephone bills so that they can reallocate the money to other priorities. One of the technologies a number of them are considering is Voice over IP, more often referred to as VOIP.

VOIP is a technology that allows one to make telephone calls using a broadband Internet connection rather than a regular voice-grade telephone line. In the 1990s, VOIP services only connected their own subscribers to one another, but by 2000 they began to offer connection to all users of VOIP services. Interoperability among VOIP services was facilitated by ITU H.323, a standard approved by the International Telecommunication Union for interoperability in audio, video and data transmission as well as VOIP. By 2002, most VOIP services also allowed subscribers to call any conventional telephone number: local, long distance, or mobile.

Calls may be made using a conventional telephone that is connected to a computer—usually a PC—through an adapter (approximately \$40) or a special VOIP telephone (\$100 or more). The technology converts the analog voice signal to a digital one that can then travel over the Internet. If the call is to a conventional telephone, the signal is converted back to analog at the other end. It is possible to use the computer for other applications while talking via a VOIP connection. The computer does not have to be turned on when making calls with a telephone and adapter or special VOIP telephone, but the Internet connection needs to be active.

Services like Skype that allow one to make calls directly from a PC with only a headset and a microphone are not VOIP services, but PC calling services.

All VOIP services offer software that performs the dialing and breakdown of the voice signals into tiny “packets” of digital data. Most offer the adapter equipment; a few offer special VOIP telephones; but microphones, speakers, and headsets are not offered.

The sound quality of VOIP service is generally equal to or superior to that offered by conventional telephone services. However, there is less redundancy, therefore, it is not uncommon for service to be lost during periods of Internet overload or severe weather conditions. A failure of power to the PC would also lead to a loss of service.

When a VOIP call is made to a conventional telephone that is not connected to the Internet, the VOIP service must pay a telco for the connection that it provides. The VOIP services described in this TechNote absorb these costs into their subscription rates.

Subscribers who want to support several concurrent users can configure their VOIP service with a router (\$30 or more). The router may be wireless, but wireless routers do not work well in some buildings, therefore, some testing is required before relying on a wireless router for VOIP.

The rates of VOIP services are not regulated the way telco rates are, therefore, there are great differences among the rates charged by various services. There also are differences in the scope of services. It is important, therefore, to analyze needs and compare services before signing up for service.

There were more than 20 VOIP services when the first TechNote on the subject was written in 2006, but the majority have gone out of business. Only three of these companies were still in business and offering service to both small and mid-size non-residential customers as of mid-2009. Two major telcos, AT&T and Verizon, dominated the large non-residential market.

The rates that are quoted in the descriptions in the following paragraphs were those in effect in mid-2009. They are subject to change. The trend is for high-priced VOIP service providers to lower their rates and for low-priced VOIP service providers to raise their rates so that differences will lessen over time.

AT&T (www.att.com/voip) introduced a business VOIP service in the fourth quarter of 2005. Rates are quoted only after a potential customer responds to a needs questionnaire. The business rates appeared to be higher than those of smaller VOIP service providers, beginning at more than \$50 per month as of mid-2009. Many special features were available at extra cost. AT&T is particularly attractive to large customers because it offers a PBX-type service.

Lingo (www.lingo.com) offered three non-residential plans as of mid-2009. The value plan was \$39.95 per month for 500 minutes in the US, Canada, and Puerto Rico. For \$49.95 per month the number of minutes was increased to 2,000 per month and several foreign countries were added. For \$79.95 per month there was unlimited calling to more than two dozen countries. All of the plans came with two lines, one of which could be used as a fax line. One free adapter was included with a plan. Additional lines were available for \$4.95 each per month. There was a \$99.95 cancellation fee if the service was cancelled before the expiration of the two-year contract. All plans included more than a score of features at no additional cost, including caller ID, conference calling, and call forwarding.

Verizon's (www.verizonbusiness.com) rolled out a comprehensive VOIP service for business in early 2006. Called Verizon VOIP, it includes a plan for small to mid-size organizations called IP Flexible T-1. It combines local and domestic long distance with data services at a fixed monthly rate that are quoted on request. Rates appeared to be comparable to those quoted by AT&T as of mid-2009, typically beginning at \$50 per month. Customers can dynamically allocate bandwidth to data or telephone traffic.

Rates for large organizations are complex because there are many options, among them PBX service. All plans include directory assistance and enhanced 911 service access.

VOIP.com focuses on non-residential customers that do not require more than two lines. The unlimited plan was \$34.95 per month and an 1800 minute plan was \$24.95 as of mid-2009. There was a \$19.95 set-up fee. Calls to the US, Canada, and Puerto Rico were included. Calls to other countries were billed by the minute. A customer that wanted more than two lines had to subscribe to multiple plans. There was a \$39.95 cancellation fee after 30 days under the one-year plan. The plans included caller ID and conference calling at no additional cost.

Vonage (www.vonage.com) was the largest vendor of VOIP services in the world as of mid-2009. The small business service was \$49.99 per month for unlimited calling and \$39.99 for 1500 minutes of calling in US, Canada and Puerto Rico. The unlimited service also included France, Ireland, Italy, Spain, and the UK. Each plan included free activation, shipping, and an adapter. A free fax line was also included. Additional lines were available at rates that were quoted on request. The minimum as of mid-2009 was \$12.99 per line per month. There was a \$39.99 termination charge after 30 days on a one-year commitment. All plans included 25 features at no additional cost, including caller ID, call waiting, voice mail, and 911 service.

The VOIP services industry is changing rapidly. It is, therefore, a good idea to access the Websites of the foregoing vendors for a current comparison of services and rates.

Prepared by Richard W. Boss, August 31, 2009

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