How VoIP Works

Many people find themselves wondering at some point how VoIP works. This is a question that is particularly likely to be asked by a new VoIP subscriber. Surprisingly, VoIP works in almost exactly the same way that e-mail does, with the biggest difference being that e-mail is digital text traffic while VoIP is digital voice traffic.

Predictably, the first step in transmitting voice traffic is to convert the voice data into digital data. This is done by specialized software installed either in the user's computer or by the hardware contained within the phone adapter supplied as part of the Internet phone.

Once the voice has been converted to a digital signal it is broken into many small portions called "packets". Each packet is placed in a virtual envelope and mailed to the appropriate IP address. The IP address is a unique address that is assigned to every device connected to the Internet, much like a street address or phone number.

The many routers in the Internet read the IP address and begin routing each digital packet to the correct destination. Interestingly, this routing often does not happen over a single, constant path. Instead, data packets are often moved over several different paths in order to avoid congestion. This speeds up data movement and makes it possible to move more voice traffic on the same line without delays and "traffic jams". At their destination the individual data packets are reassembled into the original digital signal and then handed off to an ATA adapter, which retranslates them into voice signals.

The VoIP calls can be made a number of different ways, such as by using an IP phone, or directly from one computer to another using special software. They can also be made through an ATA adapter, which converts voice signals from a conventional phone into digital form and back again. Regardless of how it's done, a broadband connection is required to get good voice quality. The speed of this connection enables enough digital traffic to flow smoothly, where a dial up connection is too limited, gets choked up when the traffic increases, and this breaks down the quality of sound delivered to the user.

The main advantage of using VoIP is that the user can make international calls, STD calls, and local calls at a fraction of what the typical cost of doing so on a conventional phone. After all, the distance between two real-world points is largely meaningless in terms of the Internet. VoIP technology also offers many of the extra-cost features available in conventional phone lines, like caller ID, call waiting, call transfer, return call and repeat dial.

Any computer connected to the Internet can make VoIP calls. This means that VoIP calls can be made from anywhere using the same IP phone and phone number, even when traveling, so long as the necessary equipment is brought along.

Though VoIP technology is still evolving, most telecom operators predict that it will revolutionize the way phone calls are made. Gone are the days requiring new telecom operators to make large investments in infrastructure. Now the technology is readily available; they only need to get dedicated IP addresses to start routing phone calls over the Internet.