**Technical language conference 17 September 2013**

**1. What is VoIP?**

VoIP (voice over IP) is a set of technologies that enable voice calls to be carried over the Internet (or other networks designed for data), rather than the traditional telephone landline system—the Public Switched Telephone Network, or PSTN.

One of the main drivers in developing VoIP was the potential to cut the cost of telephone calls. Traditional voice calls, running over the PSTN, are made using circuit switching, where a dedicated circuit or channel is set up between two points before the users talk to one another—just like old-fashioned operators, plugging in the wires to connect two callers. The advantage of this is that once the circuit is set up, the call quality is very good, because it is running over a dedicated line. But this type of switching is expensive because the network needs a great deal of (mostly under-used) capacity. The development of VoIP represents a major change in telecommunications. Whereas calls over the PSTN are metered, so the user pays for the amount of time taken by their call, Internet usage is not metered. The user pays a set fee for their Internet service and their VoIP service and can then use the Internet to get free phone calls to other users on the same VoIP service, or pay a small fee to call users on other VoIP services or on the PSTN.

**2. How VoIP Works:**

VoIP converts the voice signal from your telephone into a digital signal that can travel over the Internet. If you are calling a regular telephone number, the signal is then converted back at the other end. Depending on the type of VoIP service, you can make a VoIP call from a computer, a special VoIP phone, or a traditional phone with or without an adapter.

The basic process involved in a VoIP call is as follows:

1. Conversion of the caller’s analogue voice signal into a digital format
2. Compression and translation of the digital signal into discrete Internet Protocol packets
3. Transmission of the packets over the Internet or other IP-based network
4. Reverse translation of packets into an analogue voice signal for the call recipient.

There are now a number of ways in which VoIP can be implemented:

1. PC to PC. Both the caller and recipient use headsets plugged into their PC.
2. PC to PSTN. Only the caller uses a headset. The recipient receives the call in the traditional way.
3. PSTN to PSTN. The caller uses an IP adaptor on their traditional telephone and the call is received on a traditional phone. But the call travels over an IP network.
4. IP phone to PSTN. The caller uses an IP phone, and the call transfers from the IP network to the telephone network via a gateway.
5. IP phone to IP phone. The call travels over an end-to-end IP network.

**3. New services for learners with disabilities:**

VoIP systems enable those with disabilities to access their message through voice, audio or a Combination of both. Hearing-impaired people can place or receive calls from their computer without the need for a legacy Tele Type writer (TTY) device. With VoIP, hearing-impaired learners or staff members can read their voicemail from their email program, in much less time than it takes with a TTY, while sight-impaired users can use IP-based phones to hear audible caller IT, missed-call log and line status. In addition, VoIP may, in the near future, provide an effective medium for incorporating audio, text and video, allowing the creation of integrated communication tools that feature speech, text, language translation, captioning, speech recognition and speech synthesis from text.

**4. Advantages of VoIP:**

If you have a broadband connection with either DSL or cable, you are able to use VoIP and avail yourself with the principal advantage of VoIP telephone service – low cost. For a PC-to-PC phone call it can even be no cost to any other computer anywhere in the world (that has VoIP service installed as well, of course). While there is usually a cost to make a PC-to-phone connection, it is usually less than a “traditional” long distance call. For the traveler, VoIP provides the advantage of portability. As long as you have access to a broadband connection – and they are becoming more and more ubiquitous with each passing year – you can easily and cheaply keep in touch with family, friends, and business associates. No worrying about cell phone coverage, roaming, or long distance charges. Many of the same features that you’ve come to expect as standard with your traditional and cell phone service are available with VoIP service. Services like call forwarding, call waiting, voicemail, caller ID, three-way calling and more are available through your ip phone, usually at no extra charge. You can also send data, as you would expect with a broadband internet connection, like pictures and documents, all while talking on the phone.

**5. Disadvantages of VoIP:**

Two of the biggest problems are power interruptions and emergency calls. When your power goes out, you can still pick up your “normal” phone to call the power company to tell them your power just went out. This is because a traditional phone is powered by the phone line. This isn’t the case with an ip phone. If the power goes out, then there is nothing to power your internet connection or your ip phone. A Solution is to use battery backups or power generators to keep you VoIP service powered, but that is certainly more of a hassle than just picking up your phone and having it externally powered. An even more serious concern is that of emergency 911 calls. With a traditional phone, a 911 call is quickly traced to its origin and routed to the nearest call center where the operator will be able to see your location on his or her computer screen. To solve this problem, there is an emerging standard known as “e911” that should one day satisfactorily address this issue. Given the growth and increasing popularity of VoIP, it seems that all these disadvantages will be overcome in time. Now is the time that the major service providers – isp’s and telecoms – are using their formidable resources to work through the VoIP bugs.