

UnderstandIT

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A publication designed to inform and enable businesses to understand the implications, costs and advantages of using Information and Communications Technology. Distributed through Chambers of Commerce.

VOICE OVER IP (VOIP) AND THE FUTURE OF ENTERPRISE VOICE SYSTEMS

We have covered this subject in previous editions of Understand IT, but as technology has been moving fast in this particular area, we thought it appropriate to provide an update.

VOIP (Voice over IP) is one of those confusing acronyms used by IT professionals to describe the method of making conventional telephone calls via the Internet. Firstly, please bear with us as we try to explain digital data transmission in simple terms.

Every piece of information that any one of us sends via the Internet is conveyed in the form of digital signals (1s and 0s, or bits). For transmission of computer files (documents, photographs, web pages and all other information) then any minor transmission delay is acceptable whilst the information is encoded, transmitted and decoded at the distant end to re-create the original file and its structure. As technology has developed and the speed of transmission of information across the Internet has increased, many in the industry saw the possibility of sending information that is much more sensitive to any time delays.

Typically, live video and sound are very sensitive to any delay. With the general availability of broadband services, providing the ability to send many millions of bits per second from end to end, it has now become possible to realistically send live telephone conversations in the same form as other information. By “digitising” a voice conversation, it is therefore possible to send an analogue telephone call across the Internet, together with all other digital information being conveyed either across the Internet, or indeed across an internal Local Area Network (LAN).

One of the principal advantages of this development is that since most are now using a fixed cost, “always on” Internet connection, it is possible to make telephone calls across the Internet for free, or at least at no additional cost over and above the fixed cost of the service.

Skype, a small organisation based in Europe, was one of the first companies to successfully exploit this development, and today, the Skype software is used by many millions of users from their home or office computers (providing they are equipped with a microphone and speakers or a headset).

It was clear to many in the industry that this would only be the beginning of what is now becoming a major shift for the telephony industry.

Many conventional telephone companies and manufacturers of private in-house telephone systems (PABXs) were initially sceptical of how this would affect their business, whereas others embraced the new technology and were pioneers in developing new systems that used the new technology. It is the conventional telephone network services that have been forced to compete in a situation where calls between individuals on opposite sides of the world can now be made for free.

The market is now developing fast, and includes a whole range of telephony components and services, all of which are designed to use VOIP to send telephone calls via one or more of the following - a LAN, the Internet and conventional dial-up telephone networks.

Examples of the many sectors of the telecommunications industry that are now exploiting VOIP technology includes:

- Low-cost international telephone services – these companies have either established a presence in many countries, or more likely developed reciprocal arrangements with other local VOIP services in those countries, and offer extremely low or even free calls to almost anywhere.

Telephone calls are usually made from any conventional telephone and the services are accessed by dialling a specific, often free, local telephone call into the gateway to the provider’s network. Calls are then routed via the Internet either directly to your correspondent (if they happen to be connected to the Internet via a computer, or to the nearest point to your required destination, and then routed via the local conventional telephone network to your correspondent.

In the latter case, such calls will generate a very small local call-charge. Such services usually charge on a per call basis where you have to establish an account with the provider.

Alternatively, you can pre-purchase credit. Calls can then be made to any telephone subscriber in the world for a fraction of a euro per minute.

Add-on facilities developed by such service providers include the ability to establish a “virtual presence” in any city in the world by renting a telephone number in that city’s number range. Your correspondents can then dial that number in the conventional way, but calls to it will be routed automatically to wherever you happen to be in the world via your PC.

- PC-based VOIP services like Skype – these require the installation of typically free software on the computers of both corresponding parties. Using microphones and speakers or headsets, calls are then established end-to-end over the Internet and are totally free.
- A development on the above is the appearance of “Skype-phones” - conventional telephone devices that effectively replace the PC based software, microphone and headset, by having the Skype software incorporated into them. These devices can be connected directly to a USB port on your computer, and telephone calls are placed as you would with any conventional telephone.

Many in the IT industry have talked for some years about the “integration” of conventional computer networking with telecommunications networks and services. However, it has been VOIP that has done most to promote or force this integration.

Apart from the impact that these services have had on the conventional national telephone service providers, like British Telecom, NTL, Energis and others, the manufacturers of telephone systems or Private Automatic Branch Exchanges (the old PABX) have also had to respond and develop innovative solutions to satisfy the business user’s requirement to use this new technology to reduce their operating expenditure and benefit from greater flexibility. These new systems are now called IP telephone systems.

The advent of the new range of IP telephone systems has now brought almost total integration of the two hitherto separate worlds. These new systems are basically voice servers (read computer file servers) that connect to an organisation’s internal private network just as any other server or networked PC.

The voice server however, runs the voice applications that control telephone conversations between users on the network, who can either have software like Skype running on their PC, a Skype telephone connected via the USB port on their PC, or an IP phone that can now plug directly into any port on a network hub or router.

The IP phone system server also manages, typically a reduced number of external conventional telephone lines, for receiving and making conventional telephone calls. This integration now brings further significant possibilities for flexibility and reduced operating costs.

Your email system, for example, can now also be used to receive voicemail messages generated by the IP telephone server. Calls can then be returned to the caller by just double-clicking on the message icon in your mail inbox.

You can therefore handle all your incoming and outgoing “offline” messages in one place.

IP telephone system technology is now able to offer a growing range of solutions that are scalable from those that are appropriate for the small enterprise, up to systems that can support many hundreds of users.

One aspect of this revolution does however need to be taken into account. A typical internal Local Area Network, providing it is using up to date technology that is able to run at an acceptable speed internally can be overcome by a large number of users making many voice calls. Similarly, the gateway into the Internet, and the speed of your connection provided by your Internet Service Provider (ISP) can be seriously compromised when VOIP services are introduced. The notion of completely “free” international and national telephone calls therefore perhaps needs to be modified a little when you need to upgrade your network and the capacity of your internet connection to handle the increased network traffic!

We hope that the above has shed a little more light on what is perhaps a very “techy” subject, but VOIP and the implementation of an IP telephone system, can offer an organisation a significant improvement in flexibility and integration of existing services, but also in significantly reducing operating costs.

Should you require a more detailed assessment of your requirements, and perhaps assistance in implementing VOIP facilities in your organisation, please call Alan Finch on 01224 697457 for a “no obligation” discussion and assessment of your requirements.

NEW WINDOWS INTERNET BROWSER FROM APPLE

In the wake of the continuing success of the Mozilla Foundation’s Firefox Internet browser, Apple have now made a significant update to their Safari browser. Safari can now also run on a Windows PC and it is claimed to be almost twice as fast as Internet Explorer Version 7.

Apple hopes to steal more market share from Microsoft whose share of the browser market is now around 78%, down from 95%+ over a year ago.

However, two days after the launch of Version 3.0 of Safari, vulnerabilities were discovered in the new version. To Apples acknowledged credit, these flaws were fixed almost immediately.

You can download a free copy and try it from here:

<http://www.apple.com/safari>

We wish to acknowledge with thanks that some of the material contained within this publication has been sourced from Computer Weekly, PC Pro, BBC and other reputable sources..

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