

IP Telephones and PC Soft Clients

A summary of the issues related to using the PC as a telephone

Merging data and telephone networks is appealing because of potential cost savings in implementation, administration, and maintenance of a network. The cost advantage is coupled with the potential for high quality audio and rich services that are possible with digital networks.

Other advantages of an IP (Internet Protocol) telephony service include:

- One set of wires to the desktop instead of separate wires for computers and telephones
- Merged support resources (data and telephony) in the enterprise
- Ease of administration during moves, changes, and adds
- More bandwidth available to provide rich services such as wide-band audio, music, video, and images
- An open protocol environment enables inter-working or enhancements such as combining voice and World Wide Web (WWW) services.

In order to access IP voice services, people can use a specially designed IP telephone (such as Nortel Networks' i2004 Internet Telephone) or peripherals and software on a Personal Computer (PC) can be used to create a telephone service. This paper discusses the issues related to using a PC as a telephone in comparison to a dedicated IP telephone.

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IP Telephones and Personal Computer Soft Clients

A PC soft client is an application that runs on a PC to provide voice services on IP networks, typically using built-in microphone and speaker components and a sound card. It is tempting to use software on a PC to access voice services but there are considerations in using a PC as a telephone. A great deal of research has gone into designing the physical qualities of a regular telephone, such as the shapes of the mouthpiece and earpiece. Consequently, a user may need to adjust to the sound quality and to use a PC microphone and speakers to conduct telephone business. The coding of speech is performed on the PC Central Processing Unit (CPU) rather than a dedicated Digital Signal Processor (DSP) which may effect the transmission of speech. A PC does not yet provide the reliability of a dedicated device. At present, not all software programs work together or connect to the conventional telephone system. The real advantage of soft phones is the ability to communicate through voice and data using a single desktop device.

IP telephones are dedicated devices that look and act like a conventional telephone. Nortel Networks develops IP telephones that provide good physical and acoustic qualities, low delay, dedicated DSPs (Digital Signal Processors), real-time operating systems, and software that incorporates standards to ensure inter-operability. The telephones provide high quality voice services and they also include many Internet features, such as directory lookups and WWW browsing. In addition, an IP telephone can work with a PC to provide an unlimited number of features.

High Quality Telephone Services on Internet Protocol Networks

User expectations are usually based on conventional telephone services so achieving parity with traditional telephone quality is necessary. One important element to successful IP telephone services is reliability. The goal is to have 99.999% reliability, which relates to approximately three minutes of down time a year. Another requirement is providing a gateway to inter-work with the public telephone network. The gateway and the IP telephone must use the same speech compression codecs and protocols to ensure inter-working. Loudness plans have been developed to ensure that signal levels are consistent across connections. IP telephones are presently further along in attaining these goals than PC soft clients.

Summary

Merging data and telephony systems onto IP networks has many advantages in cost savings, flexibility, and enhanced features. A PC is an appealing device for IP telephony since microphones, speakers, and sound cards are common. Also, many computers are already connected to IP networks. At this time, the quality and reliability do not compare with a dedicated IP telephone. IP telephones are currently further along in ensuring compliance with standards and interoperability.



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