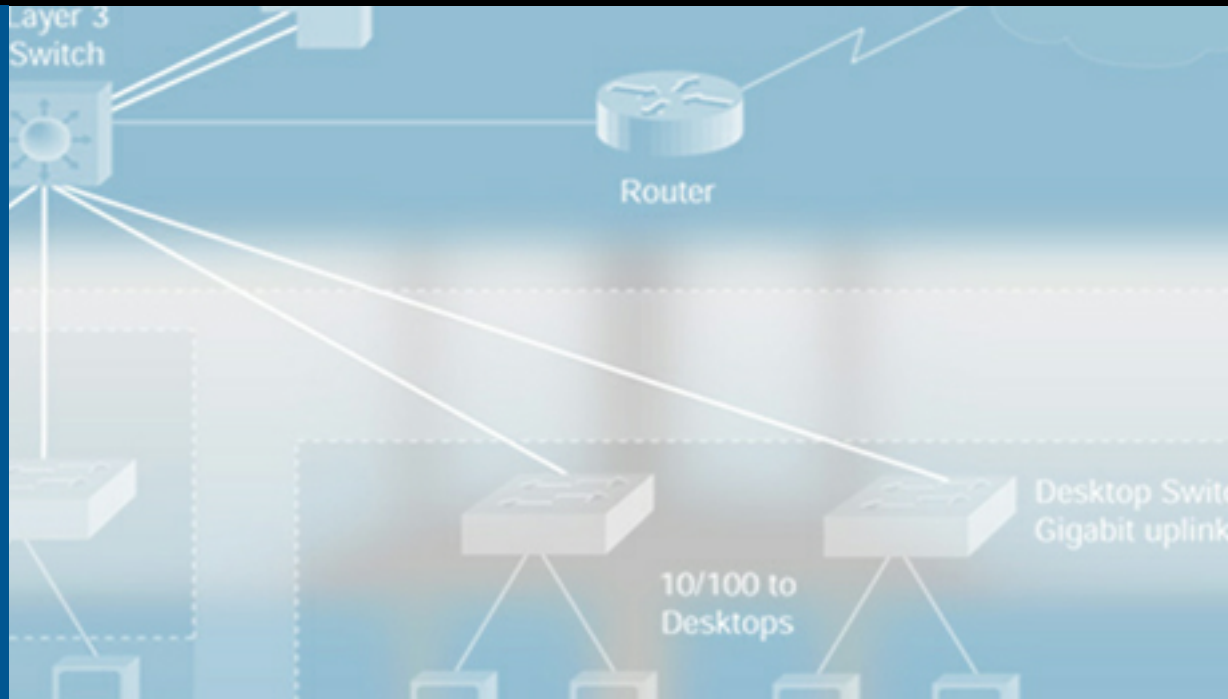




Voice over IP

Internet Technical Solution

Seminar





Voice over IP

Internet Technical Solution **Seminar**

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Voice over IP Seminar

Welcome

Welcome to the Technology Solutions E-seminar on Voice over IP.

Everyday, companies make literally thousands of calls. Although the cost of an individual call is often low, the accumulated cost to business is significant.

With the possibilities of networking today, there exist several attractive alternatives to conventional telephony, enabling companies to bring down their voice communication costs considerably.



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Objectives

In this seminar, we will discuss the technical aspects of Voice over IP.

At the end of the seminar, you will have a good understanding about what Voice over IP is about and how your company can benefit from this technology.

We will also discuss the technical requirements to implement Voice over IP in your company



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Telephony in Business

As most businesses rely heavily on voice communications, telephone expenses represent a major portion of their ongoing operational costs. IT or telecom managers therefore are always looking to find ways to reduce these costs.

Certain companies seek reduction of costs in negotiating better tariffs with service providers, others rely on private, leased-line networks to bypass public telephone charges for inter-office calls.

A new way of voice communications is possible through Voice over IP. Using this technology, phone calls can be converted and transported over networks which are normally reserved for data, where costs are often far less than pure voice networks.



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VoIP and IP Telephony

So what is the difference between Voice over IP and IP telephony?

IP telephony refers to communications services - voice, fax, and/or voice-messaging applications - that are transported via an IP network. This IP network can be your company network, for instance for internal company calls. IP telephony can also be used for external calls, using for instance the Internet, rather than the Public Switched Telephone Network, or PSTN.

IP telephony is a practical application which relies on Voice-over-IP technology. Voice-over-IP manages the delivery of voice information using I-P, or the Internet Protocol. In general, this means that voice information is transformed and sent in digital form in discrete IP packets. Such packets can travel over a data network just like any other IP traffic, generated for instance by email communication or Web browsing.



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Traditional Telephony

Most companies today have a traditional telephone network, designed around PBX's: Private Branch Exchanges. A PBX is a private telephone system within a company, that switches calls internal calls - between internal users - on local lines. At the same time, a certain number of external phone lines are shared between all users. By using a PBX, phone costs are lower, because it is no longer required to have a separate external phone line for every user.

The PBX is connected to the PSTN for external calls to users of a mobile or fixed phone, or to users in a remote office which is also equipped with a PBX. When a company has a lot of phone traffic occurring between remote offices, a leased line can bring the cost down significantly.

Local office computers are connected in a LAN

Routers connect this LAN to the Internet or remote office

Security technologies such as IPSec or VPN

Remote users are able to use applications as if they were local users

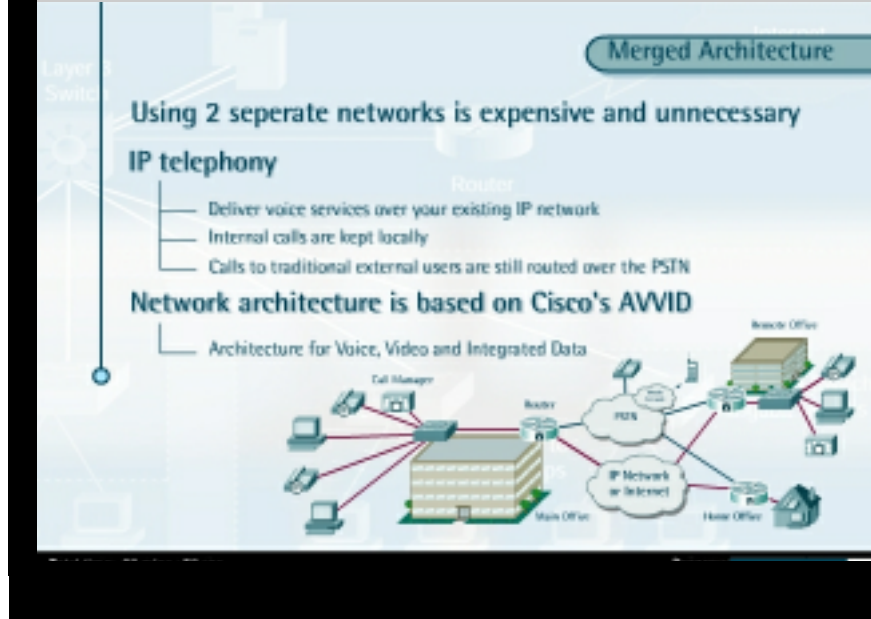


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Separate Data Network

Most companies today also have a computer network. Local office computers are connected in a LAN using LAN switches. Routers connect this LAN to the Internet, or, for instance over a leased line, to remote offices.

Using security technologies such as IPSec or VPN, users who are in remote offices, home offices or on the road, can connect to the company Intranet. In this way, they are able to use applications, tools and information as if they were local users.



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Merged Architecture

The use of 2 separate networks for phone communications on the one hand, and data communications on the other hand, is both expensive and unnecessary.

IP telephony can deliver voice services over your existing IP network. The quality of Voice-over-IP today is such that users have virtually the same experience that they have with their traditional circuit-switched network.

Using IP telephony, internal company calls are kept locally and happen over the company LAN, requiring only one network infrastructure for local calls. In the same way, calls between remote offices or home offices can also happen over the existing IP network infrastructure used for data communications. Finally, calls to external users with traditional telephones are still routed over the conventional PSTN.

This network architecture is based on Cisco's AVVID model, which is Cisco's Architecture for Voice, Video and Integrated Data.

Three types of network components

Voice Gateway

- Connects your local network to the PSTN network
- LAN switches make use of Quality-of-Service technology

Call Manager

- Provides centralised services for voice processing

IP Phones

- The handset that users will have on their desks
- Convert data into voice and vice versa
- Extra features such as directory access, conferencing and web-based information access



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IP Telephony Components

An IP Telephony solution typically requires 3 types of network components: a Voice Gateway, Call Manager software and IP Phones.

The Voice Gateway connects your local network to the conventional PSTN network, so that phone communication is possible between IP phones and traditional external phones. This role can also be accomplished by a special router. LAN switches that can switch both data and voice traffic, make use of Quality-of-Service technology, to ensure clear, high-quality voice transmission over the network.

Call Manager software provides specialised, centralised services for voice processing out to phones, gateways, and the additional services. It acts as a centralised intelligent core of the network and takes care of functions such as user administration, directory services and phone-number-to-IP address translation.

Finally, specialised IP phones are the actual handsets that end users will have on their desks. They convert data to voice and vice versa. Depending on the services available, different types of phones exist. Some phones include extra features such as directory access, conferencing, and even web-based information access.



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Benefits

Voice over IP offers many interesting benefits to companies.

The first and probably most important benefit is a significant reduction of costs, as only one network needs to be purchased and managed and communication costs are much lower. In the United States, where telephone costs are already lower than in Europe, companies using IP telephony are able to bring their phone bill down to 50% or even 30% of what it used to be.

Furthermore, Voice-over-IP enables the introduction of new applications, such as Unified messaging, web-based call centres, and improved customer care capabilities.

The merged communications network also becomes more manageable and scalable, as changes, moves and additions to the IP phone network are easily and rapidly implemented. Features and functionalities are programmable through standard graphical user interfaces, while traditional PBXs often have features - based on proprietary technology - which are difficult to program and require outsourcing.

Finally, the sound quality of today's IP telephony has improved dramatically over the last couple of years, making Voice-over-IP a mature business technology.



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New Application examples

Since Voice-over-IP uses the same underlying IP protocol as most Internet applications, such as email and web browsing, new applications integrating these functionalities become available.

Let's take an example in the area of customer care and Customer Relationship Management. Voice-over-IP allows companies to approach customer contact and call centre organisation in a much more personalised way. A combination and integration of self-service web support, phone contact with experts, and email follow-up, results in complete customer support and, as such, in more satisfied customers.

With competition never more intense, the ability to retain customers and attract new business through personalised services is becoming an essential business competency.



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Conclusions

Let's summarise the most important points.

IP telephony is a high-quality voice communications solution that delivers state-of-the-art voice functionality.

By using one single network for both voice and data communications, companies can considerably reduce the costs of investment, use and maintenance of their network.

Aside financial benefits of IP telephony, Voice-over-IP makes new applications possible, such as enhanced customer care or unified messaging.

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