Practical Fundamentals of
VOICE over IP (VoIP)
for Engineers & Technicians

YOU WILL LEARN HOW TO:

- Understand how Voice over IP works and compares to the Public Switched Telephone Network
- Understand the basics of VPN and International Telephony
- Do a Voice over IP cost-benefit analysis for your organisation
- Understand how VoIP protocols work together
- Assess other WAN transport alternatives for VoIP
- Understand the fundamentals of H.323 VoIP standard
- Implement a simple VoIP system
- Deal with packet loss, packet delay, packet jitter, signal echo and other Quality of Service (QoS) issues
- The "jargon" used in VoIP and telecommunications
- The "nuts and bolts" about selecting and installing VoIP telecommunications systems
- Make "best practice" decisions on the best and most cost effective implementation of Voice over IP for your organisation

WHO SHOULD ATTEND:

- Electrical Engineers & Technicians
- IT Personnel
- Technicians
- Managers
- Instrumentation Engineers & Technicians
- Project Engineers
- Systems Engineers
- Process Engineers
- Process Control Engineers & Technicians
- Maintenance Engineers
- Sales Engineers
- Engineering Managers
- Network Administrators
- Software Engineers
- Field Technical Support Staff
THE WORKSHOP

In the past five years, technologies have converged to such an extent that one can transmit voice, fax and video over the same Internet Protocol Network that one uses for data. This workshop examines Voice over IP (VoIP) technologies and provides you with the skills to competently implement a VoIP network for your organisation. Numerous case studies and exercises throughout the course ensure that you get a good grasp on the technologies used. Solid practical advice is given on application, implementation and most importantly troubleshooting these systems.

PRE-REQUISITES

A basic knowledge of communications and applications would be useful.

PRACTICAL SESSIONS

There are six practical sessions from configuration of a simple TCP/IP network to a simple VOICE over IP system.

ON-SITE TRAINING

— contact us for a proposal today

IDC Technologies unique on-site training delivery service can save your company up to 50%, or more, off the total per-head costs associated with delegates attending a public workshop. One of our qualified and experienced Instructors can discuss the content with you, then come to your venue and present a workshop designed to your own specifications!

Why not call or e-mail and ask about having components from a number of courses combined together? It's affordable, effective, convenient and much easier than you may have thought.

"Technology Training that Works" we mean it! Try us soon and see the difference. For more information, or a customized proposal to run any of our practical workshops at your own venue, contact your nearest business development manager for manager (see page 32).

THE PROGRAM

DAY ONE

INTRODUCTION

• Overview of course
• Terms and Definitions

TELECOMMUNICATIONS FUNDAMENTALS

• Concepts: Signaling, Circuits, Channels, Lines, Trunks,
• Bandwidth, Channel Capacity,
• 2-Wire vs. 4-wire Circuits
• Full vs. Half Duplex
• Baseband, Broadband, Narrowband and Wideband
• Analogue vs. Digital transmission
• Dial-up vs. Leased Access
• Multiplexing techniques: FDM, TDM, PCM, WDM, DWDM.
• Connection Oriented vs. Connectionless Communication
• Circuit Switching vs. Packet Switching
• Switching vs. Routing
• Local Area vs. Wide Area Networks
• The “Communications Cloud”
• The PSTN vs. the Internet
• The OSI Model

FUNDAMENTALS OF TCP/IP

• Ethernet
• Internet Protocol
• Transmission Protocol
• Application Layer Protocols

PRINCIPLES OF CONVERGED NETWORKS

• Connectionless versus Connection Oriented Network architecture
• Voice and Data Network Characteristics

APPLICATIONS FOR THE CONVERGED NETWORK

• Telephone to PC communications via the Internet
• IP Voice Virtual Private Network conversion
• Replacing International Leased Lines
• Fax over IP Networks
• Video over IP

DAY TWO

BUSINESS CASE FOR CONVERGED NETWORKS

• Fundamental Financial Assumptions
• Network Traffic Assumptions
• Case Studies
  - Interoffice
  - In-bound customer call charges
  - In-bound Call Centre charges

PROTOCOLS USED

• Ip4, Ip6 and ICMP
• Packet Addressing
• Packet Routing
• Host Name-Address Translation
• Protocols supporting VoIP

WAN TRANSPORT FOR CONVERGED NETWORKS

• WAN Transport Alternatives
• Digital Lines
• ISDN/ADSL
• IP over Frame Relay
• IP over ATM

HARDWARE SYSTEMS FOR CONVERGED NETWORKS

• Converged Network Environments
• H.323 Multimedia Standard
• Terminals
• Audio and Video Codecs
• Client Software
• Gateways
• Terminal to Gateway Communications
• Gatekeepers
• Multipoint Control Units

IMPLEMENTATION OF CONVERGED NETWORK

• Interoperability Frameworks
• Alternatives to H.323
• Application Programming Interfaces
• Quality of Service (QoS)
• Implementation of QoS
• Implementation of Converged Network

CONCLUSION

• Revision
• Pulling all the strands together

CLOSING SUMMARY

H.323 Zone

Terminal

Gatekeeper

Gateway

Router

Terminals

Multipoint Control Unit (MCU)