Voice Over IP (VoIP)

Course Summary

Description

You are familiar with telecommunication networks. Conventional telephony is gradually being replaced by voice over IP (VoIP) that carries voice traffic over data networks. In this course, you will examine the fundamentals of VoIP.

Objectives
At the end of this course, students will be able to:

- Examine the basics of telephone networks.
- Describe the fundamental concepts related to analog voice communication.
- Describe data network protocols.
- Examine packet telephony networks.
- Examine the basic concepts of VoIP.
- Examine the role played by gateways in a VoIP network.
- Examine VoIP call control protocols.
- Examine the components and techniques used in a SIP-based network.
- Describe the threats to VoIP communication.
- Describe the security technologies and measures used in VoIP.
- Examine the importance, functions, and problems related to QoS in a VoIP system.
- Examine the applications of VoIP and the services offered by it.
- Describe open source VoIP PBXs.

Topics

- Telephone Networks
- Analog Voice Fundamentals
- Data Network Protocols
- Packet Telephony Networks
- Voice over Internet Protocol
- Gateways
- VoIP Call Control Protocols
- Session Initiation Protocol
- VoIP Risks, Threats, and Vulnerabilities
- VoIP Security
- VoIP Quality of Service
- VoIP Applications and Services
- VoIP Open Source IP PBX

Audience

This course is for beginners, IT managers, or other professionals, who would like to understand the basics of voice transmission on a data network. Specifically, it is intended for persons who are preparing for entry-level careers in the telecommunications field. The basic information presented in this course will enable those persons to pursue further specialized training in specific technology areas with the eventual goal of qualifying for work as a telecommunications technical professional.

Prerequisites

Students preparing to take this course should be familiar with convergence disciplines, and should have basic telecommunications knowledge.

Duration

Three days

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically

ProTech
protechtraining.com

"Charting the Course ...

... to Your Success!"

Voice Over IP (VoIP)

Course Outline

I. Telephone Networks
- A. Introduction to Telephone Networks
- B. Public Switched Telephone Network

II. Analog Voice Fundamentals
- A. Telephony Signaling
- B. Voice Encoding
- C. Speech Coding Techniques

III. Data Network Protocols
- A. Internet Protocol
- B. TCP and UDP

IV. Packet Telephony Networks
- A. Introduction to Packet Telephony
- B. Interworking of PSTN and VoIP
- C. Packet Telephony Deployment

V. Voice over Internet Protocol
- A. Introduction to VoIP
- B. VoIP Devices and Working
- C. VoIP Setup
- D. VoIP Fax and Modem Transmission
- E. VoIP Network Architecture
- F. VoIP Operations, Administration, Maintenance, and Provisioning
- G. VoIP Issues
- H. Alternatives to VoIP

VI. Gateways
- A. VoIP Gateways
- B. G.7xx Standards
- C. Gateway Interfacing
- D. Voice Interface Configuration

VII. VoIP Call Control Protocols
- A. H.2xx Protocols
- B. H.323 Network Architecture
- C. H.323 Calling and Conferencing
- D. MGCP

VIII. Session Initiation Protocol
- A. Introduction to SIP
- B. SIP Modes of Operation
- C. Multipurpose Internet Mail Extensions
- D. SIP Extensions

IX. VoIP Risks, Threats, and Vulnerabilities
- A. Threats Against Confidentiality
- B. Threats Against Integrity
- C. Threats Against Availability
- D. Social Engineering Threats

X. VoIP Security
- A. Security Technologies
- B. IP Network Infrastructure Security
- C. VoIP Security Considerations
- D. Protection with VoIP Protocols

XI. VoIP Quality of Service
- A. Introduction to Quality of Service
- B. Packet Handling
- C. QoS Queuing Mechanisms
- D. Integrated Services in QoS
- E. Differentiated Services in QoS

XII. VoIP Applications and Services
- A. Converged Network Applications
- B. Enterprise VoIP Applications and Services
- C. VoIP Services
- D. Billing and Mediation Services

XIII. VoIP Open Source IP PBX
- A. Asterisk
- B. Trixbox
- C. Ring Groups

Due to the nature of this material, this document refers to numerous hardware and software products by their trade names. References to other companies and their products are for informational purposes only, and all trademarks are the properties of their respective companies. It is not the intent of ProTech Professional Technical Services, Inc. to use any of these names generically