

Voice over IP (VoIP)

Course Length	Two (2) days
Course Code	8002
Course Title:	Voice over IP (VoIP)
Prerequisites	None, however a data and telecom fundamental courses are extremely helpful.
Course Overview:	This course provides an overview of VoIP technology and the equipment used in a VoIP network. The class will also discuss protocols used in implementing VoIP services. Students will learn how to ensure the highest Quality of Service (QoS) and how to maintain and troubleshoot VoIP services on a data network.

*** This course can be customized or combined to meet specific training needs ***

Course Outline

DAY 1

Industry Overview

Convergence

- What is convergence?
- Benefits of convergence
- IP telephony components
- Benefits of IP telephony

VoIP Implementations

VoIP Hardware

Networks

- Circuit Switching
- Packet Switching



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Voice over IP (VoIP)

Packets

- Packet Size
- Header
 - Addressing
 - Checksum
 - Type of Service (ToS)
- Payload
- Packet Types
 - TCP
 - UDP

OSI Model

- Overview
- Protocols
- Addressing
- Equipment
- Troubleshooting
- TCP/IP Suite of Protocols
- VoIP Suite of Protocols

DAY 2

Connectivity

- Transport Networks
- Ethernet
- Wi-Fi

Networking Equipment

- Network Interface
- HUB
- Switch
 - Duplex
 - Power over Ethernet
- Router
 - Interfaces
 - Connections

Addressing

- IP Addressing
- Subnet Mask
- Gateway
- DHCP
- Gateway Address
- DNS

Voice over IP (VoIP)

VoIP Equipment

- Network Interface
- Gateway
- PBX / Softswitch
- VoIP telephones
- Softphone

IP Telephony

- Voice Codecs
- Mean Opinion Score (MOS)
- Network Quality of Service
- Interworking VoIP and SS7 architectures
- Connectionless networks
- Protocols
 - H.323
 - H.225
 - H.245
 - SIP
 - MGCP
- Gateway Architectures

Installation and Maintenance

Troubleshooting

Hands-on Exercises