

Course Name: VoIP Fundamentals

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.

Course Length: 2 days

Who should attend?

- Field Service Technicians
- Field Engineers
- Managers/ Field Supervisors
- Design Engineers
- Electricians
- Managers or Supervisors

You will learn:

- The breakdown of the industry, buzz words, and misconceptions
- Converging networks, equipment, and “soft” architectures
- Differences in network types
- Troubleshooting with the OSI Model
- Packets, addressing, and design
- VoIP protocols, signaling, voice streaming, and CODEC’s
- Effective troubleshooting and maintenance
- Network assessment and optimization

Prerequisites: None

Customizable Course: Yes

Course Content:

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

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

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

VoIP Equipment

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

IP Telephony

- Voice CODEC's
- Quality Scores
 - R Factor
 - Mean Opinion Score (MOS)
- Network Quality of Service

Protocols

- H.323
 - H.225
 - H.245
- SIP
- MGCP
- Gateway Architectures

Installation and Maintenance

Troubleshooting

Hands-on Exercises

