

# Voice Over IP: Advanced Implementation

**Hands-on course of 3 days - 21h**

**Ref.: VOP - Price 2024: CHF2 290 (excl. taxes)**

## EDUCATIONAL OBJECTIVES

At the end of the training, the trainee will be able to:

Optimize the operation of VOIP applications

Implement a network consisting of a multimedia VLAN

Configure a Cisco router as a SIP-Analog Phone Gateway

Implement a RADIUS server with a certification authority

## THE PROGRAMME

last updated: 04/2022

### 1) Introduction

- A few reminders on the basic concepts of VoIP.
- New multimedia applications.

### 2) More about IP protocols

- TCP/IP architecture and security in networks.
- LAN networks. Need for a multimedia VLAN.
- RTP/RTCP protocols. Multicast.
- Example of using multicast traffic on the multimedia VLAN.

*Hands-on work : Implementing a multimedia VLAN network, including protocol implementation and configuration of inter-VLAN routing. Implementing a RADIUS server and a certification authority.*

### 3) The SIP architecture.

- SIP protocol signaling.
- SIP architecture: SIP servers, Proxy, Registrar, etc.
- The functions of proxy servers.
- The Application Layer Gateway.
- Presence and instant messaging. IMPP (SIMPLE).
- Application to TP mobility: Mobile SIP.
- The SIP Forum interoperability tests.

*Hands-on work : Example of a SIP call and implementation of a SIP Proxy-Registrar server. Configuring a Cisco router as a SIP-Analog Phone Gateway Registering the gateway.*

### 4) Voice quality. Compression

- Deteriorated voice quality.
- Quality measurement, the MOS score.
- Codecs: G711, ADPCM and LPC.

*Hands-on work : Comparison of different codecs.*

### 5) Providing quality on your network

- Quality delivery options. Traffic measurement.
- Quality of service on an IP network. RSVP Resource Reservation.
- Priorities with DiffServ and IntServ. MPLS and VPN.

## TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

## ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

## TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

## TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

## ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at [psh-accueil@ORSYS.fr](mailto:psh-accueil@ORSYS.fr) to review your request and its feasibility.

- Tools to maintain voice quality.

*Hands-on work* : Example of bandwidth restriction between the three sites to 128 KB/s. Increased load on the network with continuous large packets. Starting VoIP calls. LLQ configuration.

## 6) Mobile IP

- Make an IP network mobile. Problems.
- Routing in an IP network.
- Components of mobile agents: Home agent and Foreign agent, their functions.
- Wireless networks and mobility.

## 7) Evolution of Voice over IP

- Future evolutions.
- Deployment methodology.
- Upcoming developments. VoIP operators.

# DATES

---

## REMOTE CLASS

2025 : 05 Feb, 14 Apr, 21 Jul, 15 Oct