



## Who Should Attend?

The course is intended to anyone who needs to broaden knowledge about role of the SIP in Multimedia over IP Systems.

## Course Content

1. VoIP Background
  - Why VoIP – benefits and problems,
  - Circuit versus packet switching for real-time services,
  - Voice services quality and measurement standards (MOS, etc.),
  - Real-time services in ATM, Frame Relay and IP networks (RTP/RTCP),
  - Voice compression (linear prediction, G.72x codecs) and packetization,
  - VoIP signaling overview (call control, media negotiations, mobility management),
  - VoIP standards evolution,
  - H.32x standards overview,
  - H.248 overview,
  - SIP overview: history, standard evolution.
2. SIP Fundamentals
  - SIP main architecture,
  - SIP components (servers and clients) and their functions: SIP user agents (AU client and server),
  - SIP servers: proxy (stateful and stateless), redirect, registrar,
  - SIP location servers,
  - SIP gateways,
  - SIP message structure,
  - SIP requests and response codes,
  - SIP supporting IETF protocols (SAP, SDP),
  - SIP sessions: session setup, proxying and redirecting requests, address resolution, media negotiation via SDP.

3. SIP Advanced Features
  - Call state in SIP Servers,
  - Call flow analysis,
  - SIP to PSTN interworking - SIP for Telephones (SIP-T),
  - SIP security,
  - QoS issues (call setup time, IP QoS),
  - The firewall and NAT problem.
4. SIP in 3G Mobile Systems
  - 3GPP mobile system architecture and its evolution (Release 3,4,5 and 6),
  - IP Multimedia Subsystem (based on SIP) architecture (components),
  - IMS services,
  - 3GPP extensions to SIP,
  - IMS call routing scenarios,
  - IMS and QoS.
5. SIP Final Remarks
  - Standardization trends - RFC's and Internet-Drafts (IETF SIPPING workgroup),
  - SIP vs. H.323 (performance, robustness, security),
  - SIP deployment rules,
  - SIP deployment status,
  - SIP open issues.

## **Course Objectives**

The Session Initiation Protocol (SIP) is an application-layer signaling protocol used for establishing multimedia sessions (typically VoIP) in an IP network. It is a relatively simple protocol having been developed purely as a mechanism to establish sessions. It can be used as a signaling protocol for conferencing, telephony, presence and instant messaging. It is seen as a fundamental protocol for multimedia communication in packet networks. This technical, 2-days long SIP training seminar provides a high-level overview of SIP based systems and functionality. It is recommended for the technical staff with basic knowledge of wired and wireless telecommunications systems. The seminar will start with some generic VoIP issues and will focus on multimedia platforms based on the SIP protocol.

## **Pre-requisites**

There are no prerequisites to attend the course, but basic knowledge about IP would be beneficial.

## **Training Structure**

Two days training divided into logical sessions.

## **Methodology**

Instructor led training.