

Introduction to Session Initiation Protocol

Course outline

SIP Overview

- Fundamentals of how SIP works
- SIP context and architectures
- SIP sessions
- SIP flows
- Core SIP
- Encapsulation
- Translation
- SIP content negotiation
- Session description protocol (SDP)
- Security considerations
- HTTP and SMTP, SIP
- SIP extended features and services
- Call control services, mobility, interoperability with existing telephony systems
- Standardization status
- Supported services
- Proprietary extension and negotiation mechanisms
- Interoperability of services and features
- Interworking with PSTN
- Service creation issues
- Basic call features
- Quality of Service issues
- Network services
- Conferencing and addressing

SIP System Operations

- SIP Parameters

- Protocols
- User Agents
- Call Processors
- Customer Status
- Address Tracking
- Call Forwarding

SIP Protocol Operation

- Client/Server transactions
- Proxy servers
- SIP messages
- Transport layer
- Extending SIP
- Extension negotiation
- Technical details of SIP extensions
- SIP Extensions
- Session Description Protocol (SDP)
- SDP packets
- SIP timer
- SIP programming

SIP Entities

- Components of SIP
- SIP Clients
- SIP as a peer-to-peer protocol
- User Agents (UAs) as the peers in a session
- User agent client (UAC)
- User agent server (UAS)
- SIP Servers
- Using A Proxy Server
- Using a Redirect Server
- Proxy Server
- Redirect Server

- Registrar

SIP Messages

- Message Types
- Message Parts
- Message Samples
- Requests
- Responses
- Header Fields
- Bodies
- Framing SIP Messages
- Status Code Definitions
- Informational 1xx
- Successful 2xx
- Redirection 3xx
- Request Failure 4xx
- Server Failure 5xx
- Global Failures 6xx

SIP Parameters

- Header Fields
- Option Tags
- Warning Codes (warn-codes)
- Methods and Response Codes
- Reason Protocols
- Security Mechanism Names
- Compression Schemes

SIP Signaling Flows in IMS and LTE

- LTE core network architecture
- Call management in IMS
- Soft handover
- Hard handover
- Registration

- Session initiation
- Session termination
- Roaming scenarios
- Voice over LTE

SIP Products and Trends

- Application Servers
- Applications
- Session Border Controllers
- SIP based Services
- SIP Gateways
- SIP Hardware Appliances
- SIP Phones
- SIP Presence and Messaging Servers
- Software Development Kits
- Testing and Simulation