Session Initiation Protocol (SIP)
eLearning | Average Duration: 2 hours | Course Number: IPC_110

The Internet has become the single network that provides universal connectivity around the world. One of the new and exciting uses of the Internet is to provide voice and multimedia services. A protocol must exist to establish these voice and multimedia calls. This course discusses the Session Initiation Protocol (SIP). SIP was developed by the Internet Engineering Task Force (IETF) to establish voice and multimedia calls through the Internet. SIP is designed to establish voice calls as well as any connection between two or more parties. This connection can vary from simple Instant Messaging to more complex multimedia sessions. The messaging and architecture of SIP are explained in detail including the key contents of the messages and the key components of the architecture. The concepts of SIP are solidified with the presentation of a series of multimedia service establishment examples.

Intended Audience
This course is intended for anyone seeking an overview of SIP, its features and capabilities.

Learning Objectives
After completing this course, the student will be able to:

- Explain the motivation behind a consolidated voice and data network
- Describe the challenges of a consolidated network
- Define the term softswitch and its usage
- Describe how SIP will be used to establish everything from voice calls to multimedia sessions
- Identify components in the SIP architecture and their function in the converged network
- State the use and flexibility of the Session Description Protocol
- Explain how SIP is being extended to provide additional capabilities

Suggested Prerequisites
- Welcome to IP Networking (eLearning)

Course Outline
1. Motivation for Voice over IP networks
   1.1. Motivation for consolidating voice and data
   1.2. Benefits of a consolidated network
   1.3. Challenges of a consolidated network
2. Key Features of SIP
   2.1. Introduction to SIP
   2.2. Key characteristics and features of SIP
3. SIP Messaging
   3.1. Basic session establishment
   3.2. Session Description Protocol
   3.3. Addressing
   3.4. Registration
4. SIP Architecture
   4.1. Functions and capabilities of SIP servers
   4.2. Role of User Agent
   4.3. Proxy and redirect servers
   4.4. Function of a softswitch
5. Examples of session establishment
   5.1. Establishment of a video call via LAN
   5.2. Establishment of a voice call via ITSP
6. SIP Challenge
   6.1. Extensions
   6.2. Firewall traversal
7. Looking Ahead
   7.1. Future of SIP
8. Summary

Put It All Together
Assess the knowledge of the participant based on the objectives of the course