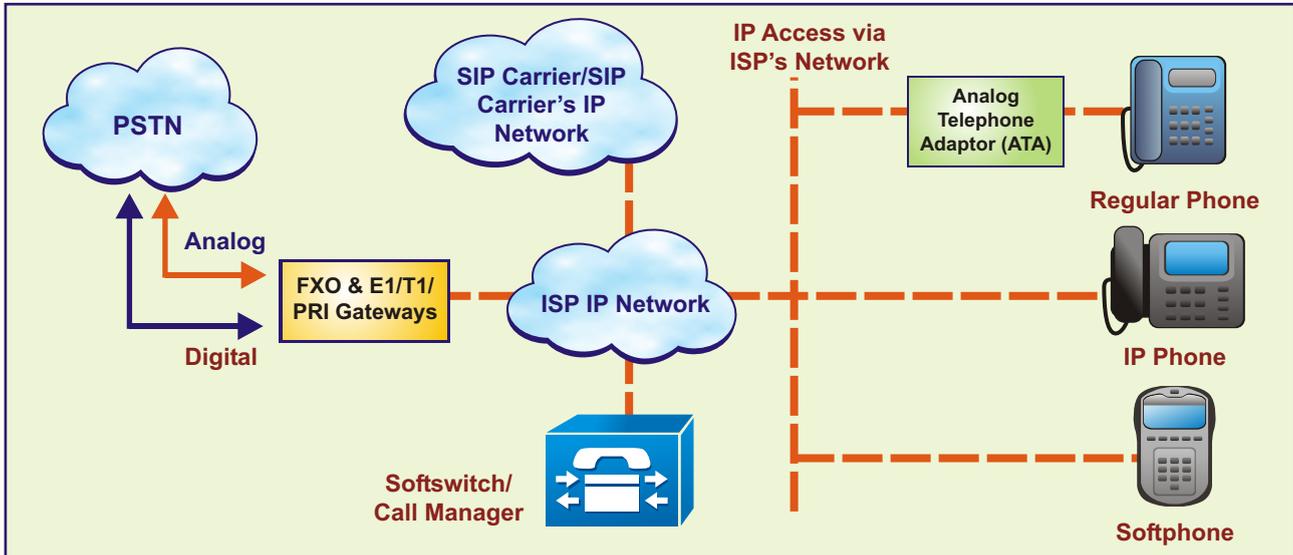# SIGMA

4G VOIP SIP SOFTSWITCH TRAINER
MODEL - VOIPSW100

This trainer has been designed with a view to provide practical and experimental knowledge of VOIP Softswitch Protocol Implementation.

What is VOIP Softswitch (Voice Over Internet Protocol - Software Switch)

- A softswitch, short for software switch, is a central device in a telecommunications network which connects telephone calls from one phone line to another, across a telecommunication network or the public Internet, entirely by means of software running on a general-purpose computer system.
- Landline calls are routed by purpose-built electronic hardware While VOIP calls are routed by soft switches which are based on general purpose servers.
- Softswitch technically refers to any such device that handles IP-to-IP phone calls.
- Access Server or Media Gateway is used to refer to the devices which either originate or terminate traditional "land line" (hard wired) phone calls.
- A Skype-to-Skype phone call is entirely IP (internet) based, and so uses a softswitch somewhere in the middle connecting the calling party with the called party.
- Access Servers take a mobile call or a call originating from a traditional phone line, convert it to IP traffic, then send it over the internet to another such device, which terminates the call by reversing the process and converting the Voice over IP call back to older circuit switched digital systems using traditional digital ISDN / PSTN protocols that transmit voice traffic using non-IP systems.
- A softswitch is typically used to control connections at the junction point between circuit-switched and packet-switched networks. A single device containing both the switching logic and the switched fabric can be used for this purpose; however, modern technology has led to a preference for decomposing this device into a Call Agent and a Media Gateway.
- The Call Agent takes care of functions such as billing, call routing, signaling, call services and the like, supplying the functional logic to accomplish these telephony meta-tasks. A call agent may control several different media gateways in geographically dispersed areas via a TCP/IP link. It is also used to control the functions of media gateway, in order to connect with media as well as other interfaces.
- The Media Gateway connects different types of digital media stream together to create an end-to-end path for the media (voice and data) in the call.
- The softswitch generally resides in a building owned by the telephone company called a telephone exchange. While medium-sized devices and PBXs are most commonly used by business that locate them on their own premises, and single-line devices are mostly found at private residences.

SPECIFICATIONS

1. VOIP Softswitch is based on Proxy server to simplify business activity in the telecom market.
2. It is a special software server designed to manage softswitch VoIP networks based on SIP softswitch and H.323 gatekeeper.
3. Functions of Softswitch:

   Signal and Media streams proxy

   Cross-protocol conversion

   Media streams transcoding

   User authentication and authorization

   Calling to optimum terminators

   Report generation
4. Advanced call routing features and embedded compact billing system
5. Subscribers' registration and call routing are based on SIP and H.323 protocols.
6. The software supports integration with external routing and billing servers through RADIUS protocol, while JDBC protocol is used to connect with external database servers.
7. It maintain call lists (Call Data Record) and supports NAT traversal.
8. The transit proxy server can successfully process up to 1024 simultaneous calls.
9. Operating System   : Microsoft Windows and Linux.
10. VOIP Hardware Phones   : 2 Nos
11. VOIP Software Phones   : 2 Nos
12. VOIP EPBX   : 1 No.
13. **Books for VOIP Communication   : 10 Nos in pdf Format**
14. **Mp4 Video Class for VOIP Communication   : 40 Classes in Mp4 on Pen Drive**

EXPERIMENTS

1. To Study the Block Diagram and Working principle of VOIP and Softswitch
2. To understand different types of VOIP hardware
3. To understand different types of VOIP software
4. To install and configure VOIP hardware
5. To install and configure VOIP software
6. To talk with other phone using VOIP phone
7. To use following features of VOIP EPBX

   Callback, Voice Mail, Call Forwarding, Call Recording, Call Hold, Group Call, Ring back tone

   Music-on-hold Service

   Subscriber self-service

   Call data records (CDR)

   Embedded rating and billing

   NAT traversal Integration with external billing system

   Interactive Voice Responses (IVR) Report generation