University of Diyala

Telecom Switching Systems

Lecture 1

4th Stage

Communication department / Engineering collage

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Introduction

- The exchange of information between two or many individuals is called **Communication**.

- The word **tele** is a Greek word which means distance. Hence, **Telecommunication** means the exchange of information between two distant places.

- Telecommunications represent the transfer of information, from an entity at one place to an entity at another place, whereas the information can be in the form of data, voice or symbol.
- The entities can be human beings, computers, facsimile machines, telegraphy machines, phones or so on.
- In telephone conversation, the one who initiates the call is referred to as the **Calling Subscriber** and the one for whom the call is destined is the **Called Subscriber**. In other cases of information transfer, the communicating entities are known as **Source** and **Destination**, respectively.

- In March 1876, Alexander Graham Bell invented and demonstrated his telephone set and the possibility of long distance voice communication.
- He demonstrated the **point-to-point** communication, in which a calling subscriber chooses the appropriate link to establish connection with the called subscriber.
- This system also requires some mode of **Signaling** to alert the called subscriber about the incoming call and a signal to indicate the calling subscriber, when the called subscriber is busy on another call.

Elements of Communication Switching System

The purpose of a telecommunication switching system is to provide the means to pass information from any terminal device to any other terminal device selected by the originator.

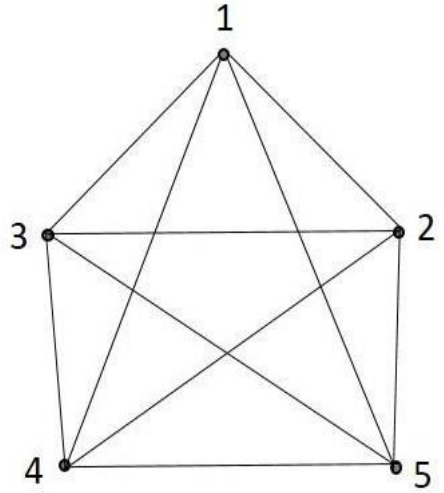
Telecommunication system can be divided into four main parts. They are

- End system or Instruments
- Transmission system
- Switching system
- Signalling.

Need for Switching Exchanges

The point-to-point connection for establishing communication requires the telephone sets to be linked using wires. If the number of telephone sets or the subscribers present is low in number, the type of connection will be a little complex. However, if this number is high or moderate, then the connections will lead to a mess. To understand the complication, let us consider a network of 5 subscribers.

The following illustration shows a point-to-point connection for five subscribers (telephone sets):



In the point-to-point connection, for **n** entities, we need **n(n-1)/2** links. All these links form a network. Networks with point-to-point links among all the entities are known as **Fully Connected Networks**. The number of links required in a fully connected network becomes very large even with moderate values of **n**.

Hence, a system of switching the networks is needed in-between these subscribers. Alexander Graham Bell recommended the Switching between the subscribers using a switching office that maintains the telephone connections.