University of Diyala

Telecom Switching Systems

Lecture 3

4th Stage

Communication department / Engineering collage

lecturer Marwa Mohammed

The **Automatic** switching systems are classified as the following:

- **Electromechanical Switching Systems** - Here, mechanical switches are electrically operated.

- **Electronic Switching Systems** – Here, the usage of electronic components such as diodes, transistors and ICs are used for the switching purposes.

Electromechanical Switching Systems

The Electromechanical switching systems are a combination of mechanical and electrical switching types. The electrical circuits and the mechanical relays are deployed in them. The Electromechanical switching systems are further classified into the following.

- **Step-by-step**
- **Crossbar**

Step-by-step

The **Step-by-step** switching system is also called the **Strowger** switching system after its inventor A B Strowger. The control functions in a Strowger system are performed by circuits associated with the switching elements in the system.

Crossbar

The **Crossbar** switching systems have hard-wired control subsystems which use relays and latches. These subsystems have limited capability and it is virtually impossible to modify them to provide additional functionalities.

Electronic Switching Systems

The Electronic Switching systems are operated with the help of a processor or a computer which control the switching timings. The instructions are programmed and stored on a processor or computer that control the operations. This method of storing the programs on a processor or computer is called the **Stored Program Control** (SPC) technology. New facilities can be added to a **SPC** system by changing the control program.

The switching scheme used by the electronic switching systems may be either

- **Space Division Switching** where in the space division switching, a dedicated path is established between the calling and the called subscribers for the entire duration of the call.
- **Time Division Switching** where in the time division switching, sampled values of speech signals are transferred at fixed intervals.

The time division switching may be **analog** or **digital.**

- **In analog switching**, the sampled voltage levels are transmitted as they are.
- **In binary switching**, they are binary coded and transmitted.

❖ If the coded values are transferred during the same time interval from input to output, the technique is called **Space Switching**.

❖ If the values are stored and transferred to the output at a time interval, the technique is called **Time Switching**.

❖ A time division digital switch may also be designed by using a **combination of space and time switching** techniques.