University of Diyala

Telecom Switching Systems

Lecture 13

4th Stage

Communication department / Engineering collage

Lecturer Marwa Mohammed

Classes of Switching System

There are three classes of switching system based on the division of information in space, time and frequency.

1. **Space division switching**
2. **Time division switching**
3. **Frequency division switching**

Evolution of Switching System

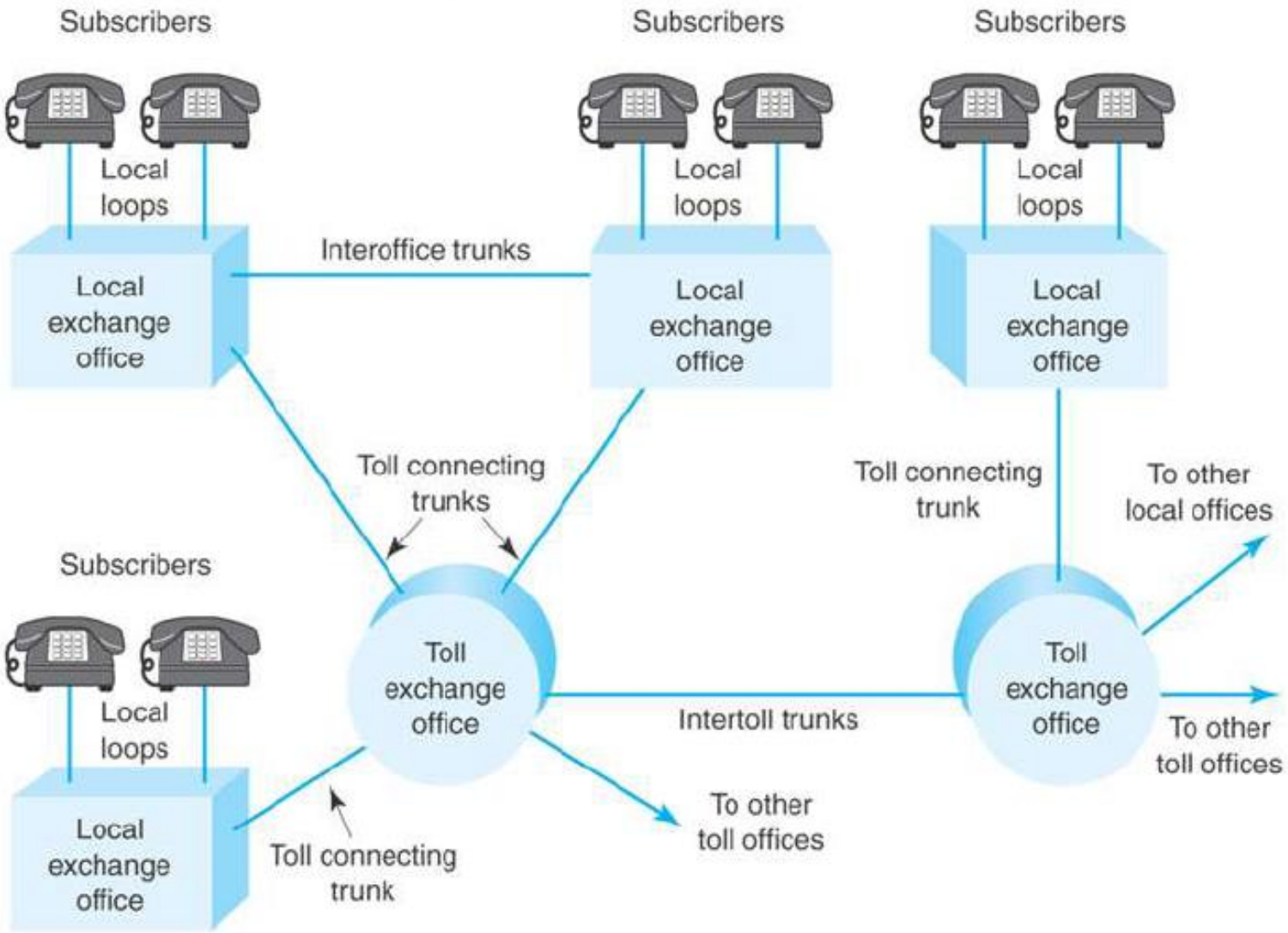
To setup connection between subscribers, the public switched telephone network (PSTN) consists of

- **Transmission systems**
- **Switching system**
- **Signalling systems**.

Evolution of Switching System cont.

The PSTN consists of the following hierarchy.

- Local networks which connect subscribers and local exchanges.
- Function networks, which interconnect a group of local exchanges serving an area and a trunk exchange.
- Trunk network which provides long distance connections nationally and internationally.


Subscribers
Subscribers
Subscribers
Local loops
Local loops
Local loops
Interoffice trunks
Local exchange office
Local exchange office
Local exchange office
Toll connecting trunks
Toll connecting trunk
To other local offices
Subscribers
Toll exchange office
Toll exchange office
Local loops
Intertoll trunks
To other toll offices
Local exchange office
Toll connecting trunk
To other toll offices

Stored Program Control (SPC) Exchange

- In 1965, the Bell system installed the first computer-controlled switching system which uses a stored-program digital computer for its control functions.
- The SPC concepts permit features like abbreviated dialing, call forwarding, call waiting, etc.
- The SPC provides significant advantages to end-users.
- The SPC enables easier number changes, automated call tracing message unit accounting (for billing), etc.

Basic of SPC

- In Stored Program Control (SPC), a program or a set of instructions are stored in its memory and executed automatically one by one by the processor.

- Carrying out the exchange control functions through programs stored in the memory of a computer led to the name stored program control.

- The decisions are expressed as programs which can be rewritten to modify or extend the functions of control system.

- All switching systems manufactured for use as public switching systems now use computers and software programming to control the switching of calls.

Basic Control Structure of SPC

- The SPC uses processors designed to meet the various requirements of the exchange. More than one processors are used for the reliability.

- Also the SPC system uses distributed software and hardware architectures.

- To carry over the maintenance functions of the switching system, a separate processor is used.

- There are two types in SPC exchanges, namely centralised SPC and distributed SPC

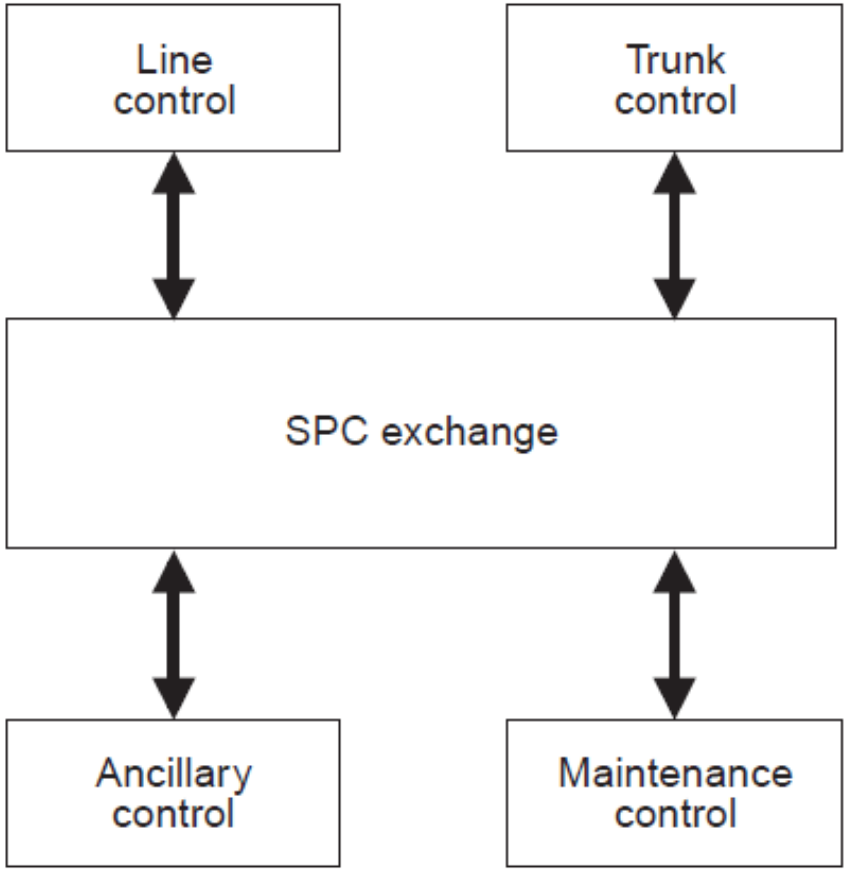


Fig. Basic control structure of SPC

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How to organise stored program control (SPC)

There are two approaches to organizing stored program control (SPC):

- Centralized: In this control, all the control equipment is replaced by a single processor which must be quite powerful.
- Distributed: In this control, the control functions are shared by many processors within the exchange itself.

Typically Centralized SPC Organization