

University of Diyala

Telecom Switching Systems

Lecture 10

4th Stage

Communication department / Engineering collage

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Introduction

- Earlier electronic switching system was based on the stores program control (SPC) system in which temporary memory was used for storing different information.
- Digital systems employ multiprocessor subsystem for the best control. So software are necessary to implement the processing system for all of control structure.
- In digital switching systems, call processing functions are performed by using interface controllers.
- Microprocessor is mostly used for controlling in the digital switching system to reduce the cost of call processing.



Call Processing Functions

- The functions of processing calls are performed by software or by using interface controllers.
- Some of basic functions of call processing system are:
 - ✓ Call identification
 - ✓ Call routing
 - ✓ Path setup between subscribers
 - ✓ Call status
 - ✓ billing
 - ✓ Digital translation
- Generally, call processing takes place independent of the switching network



Basic Steps to Process a Call

For any switching system design, the range of signals that has to be interchanged between a terminal and system is considered.

The sequence of processing between subscribers are described below:

1. Idle state
2. Call request identification
3. Providing dial tone
4. Address analysis.
5. Called line identification
6. Status of called subscriber
7. Ringing
8. Path setup
9. Supervision
10. Clear signal



- 1. Idle state.** At this state, the subscriber handset is in ‘on-hook’ condition. The exchange is ready to detect the call request from the subscriber.
- 2. Call request identification.** The exchange identifies a line requiring for a service. When the handset is lifted, current flows in the line called seize signal indicates the call request.
- 3. Providing dial tone.** Once the seize signal is received, an exchange sends a dial tone to the calling subscriber to dial the numbers.
- 4. Address analysis.** Once the first digit received, the exchange removes the dial tone and collect all numbers. Then the address is analysed for the validity of the number, local etc. If the number is invalid, a recorded message may be sent to the calling subscriber and terminates call request.



5.Called line identification. The exchange determines the required outgoing line termination from the address that it has received.

6.Status of called subscriber. The called line may be busy or free or unavailable or even out of service. In the case of PBX, where the customer have a group of lines, the exchange tests each termination until either it finds a free one or all one found busy. For busy, number unobtainable or the handset off hook, a status signal or call progress signal is sent to the calling subscribers for line termination. Now the exchange resumes idle state.

7.Ringing. Once, the exchange finds the called subscriber is free, power ringing is provided to the called subscriber and audible ringing to the calling subscriber.



8. Path setup. When the called subscriber lifts his handset, the line is looped and ringing is removed. Once the conversation started, the exchange completes the connections between the subscribers.

9. Supervision. The exchange supervises the connection to detect the end of the call for charging.

10. Clear signal. Once the need for connection is over. It causes the line current seize and provides a clear signal to exchange.

