

PRIVATE BRANCH EXCHANGE (PBX) & CENTREX

ETI 2506

Monday, 21 November 2016

SYLLABUS

ETI 2506 Telecommunication Systems

Prerequisites

ETI 2301 Computer Networks

Purpose

The aim of this course is to enable the student to;

1. understand evolution of telephony
2. understand structure of basic transmission systems and network topologies

Learning Outcomes

At the end of this course, the student should be able to;

1. apply knowledge of telephony in telecommunication systems

Course Description

Evolution of the fixed line telephony, analog to digital, relay switched to stored program controlled switching, manual PBX to private automatic branch exchange(PABX), analog to ISDN and DSL, non-cellular mobile phone systems, cordless phones (DECT). System structure: Basic transmission system. Types of switching: circuit switching, message switching and packet. Network topologies, exclusive and multiparty lines; signaling methods; signaling No. 7 protocol. Call types: local, trunk and international, automatic multi-exchange connection and inter-exchange signaling. Terminal Equipment: Telephone set (receiver and transmitter), telex, facsimile, computer. Traffic modeling and dimensioning: queuing theory, Erlang traffic theory. Use of traffic tables in capacity design of telephone network systems.

PRIVATE BRANCH EXCHANGE & CENTREX

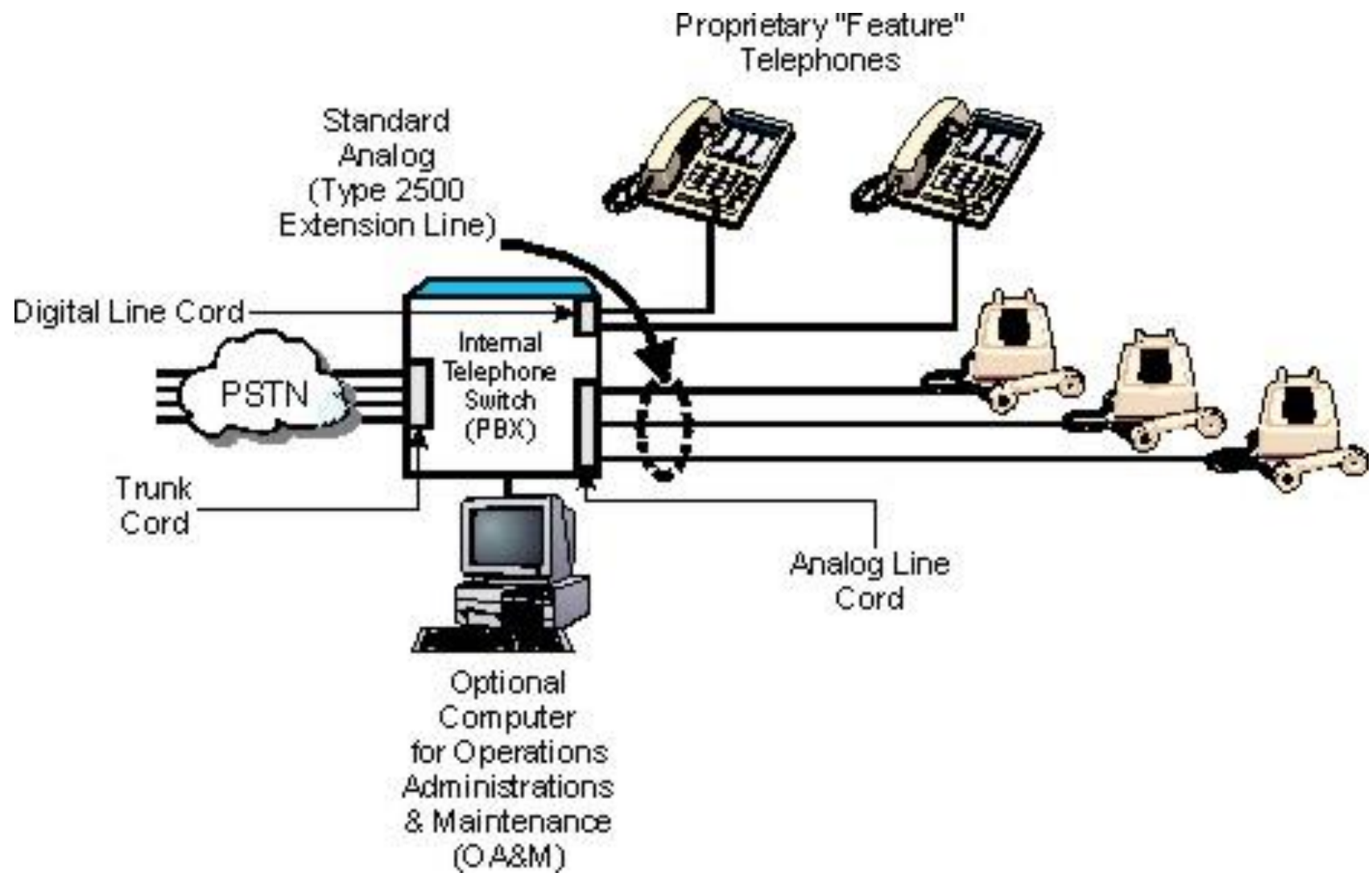
- Common features between PBX and Centrex:
 - connections between staff in organizations
 - connections to the outside world
 - Charge-free calls for on-site personnel
- Main differences between branch exchange and the centrex:
 - The location of equipment
 - The ownership of equipment

PRIVATE BRANCH EXCHANGE (PBX)

Features:

1. Located on the customer's premises
2. Owned by the customer
3. Eliminates the need to wire each on-site individual telephone to the Public Telephone Exchange
4. All lines are connected to the PBX switch, which connects to a central switch operated by provider (Safaricom, Telkom or AirTel).
5. Employees do not have to pay for:
 - a) Telephone calls to central office (Paid for by the organization)
 - b) Telephone calls made to people in the organization (Free)
6. Dialing within the system can be done with fewer digits
 - Internal telephone numbers, i.e the number of the extension (340, 350, 452)

ANALOGUE PBX

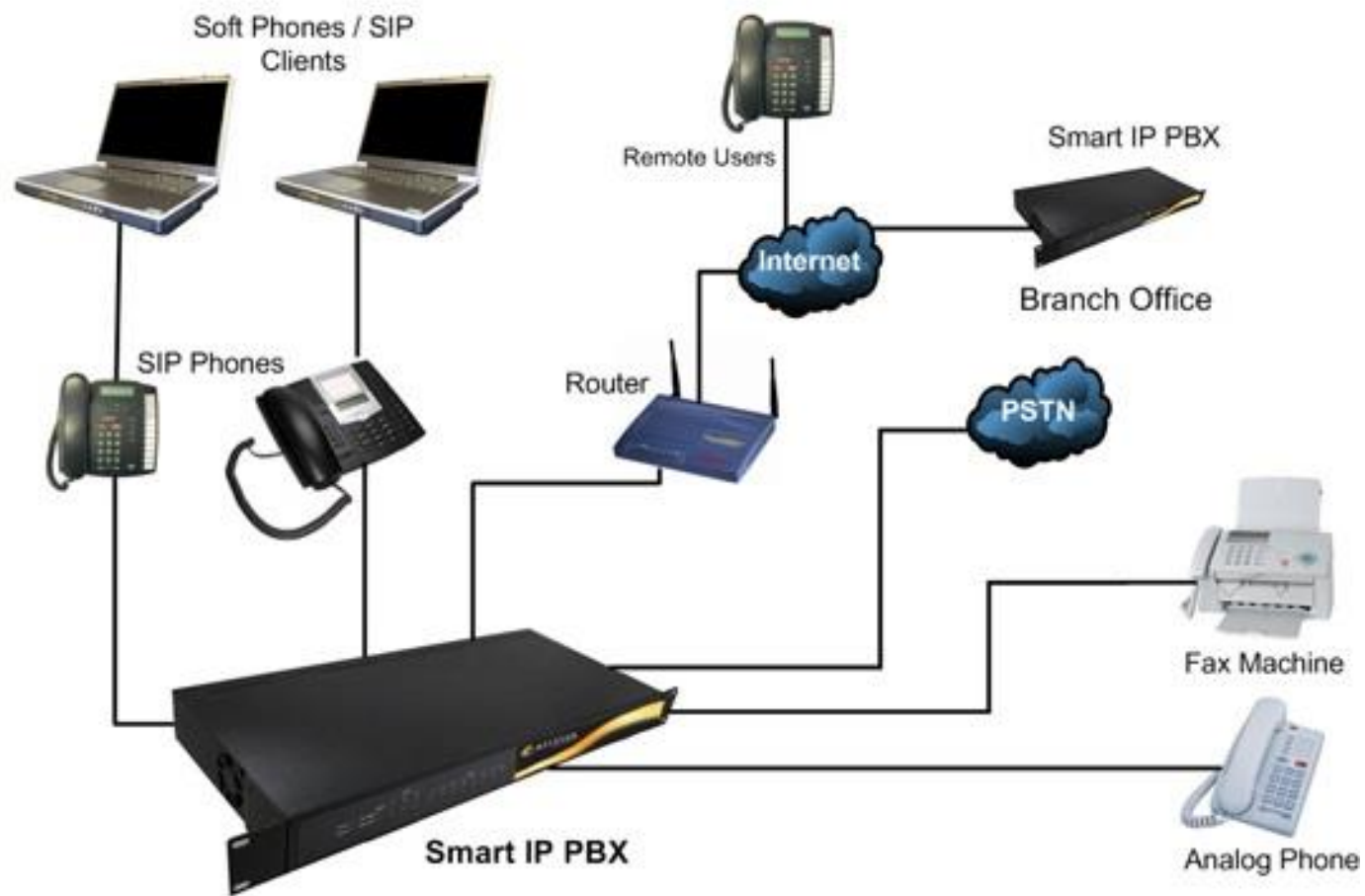


PRIVATE BRANCH EXCHANGE (PBX)

PBX Strength

1. Feature offerings are more in-depth than those offered by a PSTN.
2. The organization can deploy of features is at will without reference to outsiders
3. Management of system is immediate on an as needed basis and is totally unrestricted.
4. Most features are paid for initially at once, or
5. Major equipment costs are incurred upfront.

IP PBX



CENTRAL EXCHANGE (CENTREX)- 1

1. **CENTRAL EXCHANGE** Centrex service is a standards based business telephone service offered by the local telephone company from a local central switching office.
2. Features:
 - a) Located on the telephone providers premises
 - b) Equipment owned by the telephone provider
 - c) Offers same features as PBX in terms of costs per call, and reduced digit dialing
 - d) User base around 50 to 125 telephones
 - e) No-requirement for on-site switching equipment

CENTRAL EXCHANGE (CENTREX) -2

Centrex Strength

1. Existing analogue instruments can be retained.
2. Maintenance is covered 24 hours a day with no extra charge for system life.
3. System upgrades and expansion is automatic with no extra charge.
4. Phone companies are fully prepared for disasters and switch failures with standby emergency equipment.
5. Reduces an organization's involvement in the telephone business.