FACULTY OF ENGINEERING & TECHNOLOGY

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Topics Covered

Base Transceiver Station (BTS)
Functions of BTS
Base Station Controller
Mobile Station
Functions of Mobile Station

Base Transceiver Station (BTS)

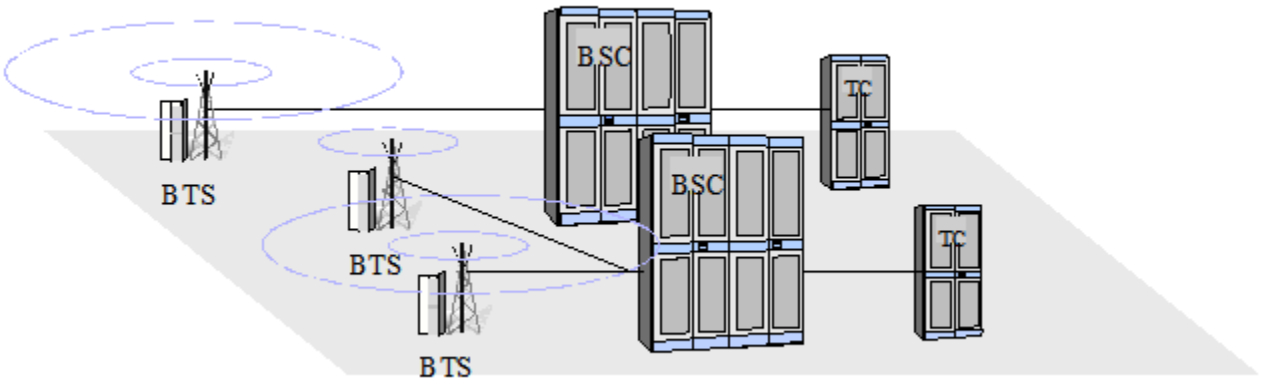
BTS houses the radio transceivers and handles the radio-link protocols with the Mobile Station. Each BTS comprises of radio transmission and reception devices including antenna, signal processors, etc. Each BTS can support 1 to 16 RF carriers. The parameters differentiating the BTSs are Power level, antenna height, antenna type and number of carriers.

Functions of BTS

It is responsible for Time and Frequency synchronization.
The process of channel coding, Encryption, Multiplexing and modulation for trans-direction and reverse for reception are to be carried out.
It has to arrange for transmission in advance from the mobiles depending upon their distance from BTS (Timing Advance).
It has to detect Random access requests from mobiles, measure and monitor the radio channels for power control and handover.

Base Station Controller

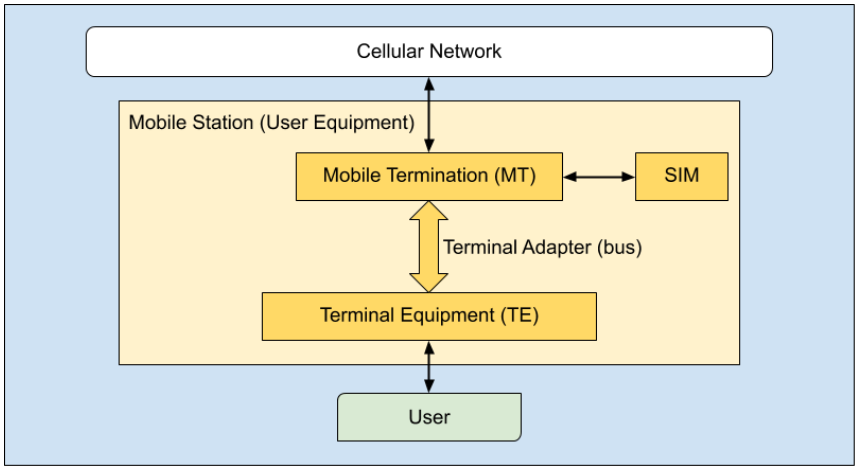
BSC manages the radio resources for one or a group of BTSs. It handles radio-channel setup, frequency hopping, handovers, and control of the RF power levels. BSC provides the time and frequency synchronization reference signals broadcast by its BTSs. It establishes connection between the mobile station and the MSC. BSC is connected via interfaces to MSC, BTS and OMC.



Mobile Station

It refers to the terminal equipment used by the wireless subscribers. It consists of −
SIM -Subscriber Identity Module
Mobile Equipment
SIM is removable and with appropriate SIM, the network can be accessed using various mobile equipments.

The equipment identity is not linked to the subscriber. The equipment is validated separately with IMEI and EIR. The SIM contains an integrated circuit chip with a microprocessor, random access memory (RAM) and read only memory (ROM). SIM should be valid and should authenticate the validity of MS while accessing the network.



Functions of Mobile Station

Radio transmission and reception
Radio channel management
Speech encoding/decoding
Radio link error protection
Flow control of data
Rate adaptation of user data to the radio link
Mobility management

MCQ

Commonly used mode for 3G networks is
a. TDMA
b. FDMA
c. TDD
d. FDD
ANSWER: FDD
22) The minimum spectrum allocation required for W-CDMA is
a. 5MHz
b. 2MHz
c. 500KHz
d. 100KHz
ANSWER: 5MHz
23) CDMA2000 1xEV provides high speed data access with channel allocation of
a. 5 MHz
b. 50 MHz
c. 1.25 MHz
d. 4 MHz
ANSWER: 1.25 MHz
24) In TD-SDMA, there is a frame of _____milliseconds and the frame is divided into _____ time slots.
a. 5, 7
b. 7, 5
c. 2, 5
d. 5, 2
ANSWER: 5, 7
25) The interference between the neighboring base stations is avoided by
a. Assigning different group of channels
b. Using transmitters with different power level
c. Using different antennas
d. All of the above