

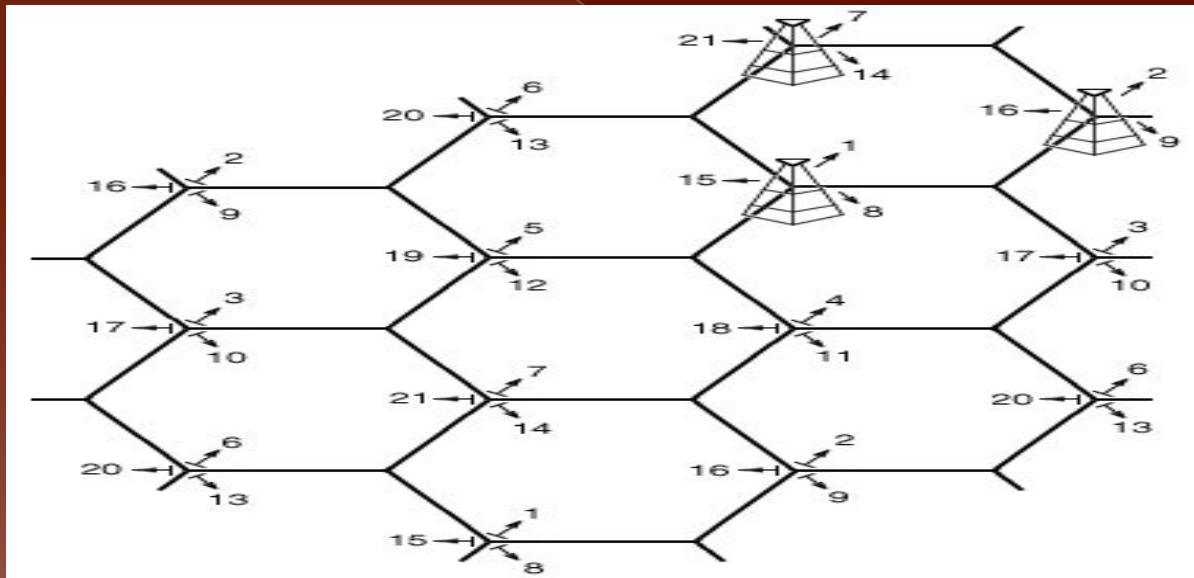
Cellular network

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A cellular network or mobile network is a communication network where the last link is wireless



The network is distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a cell site or base station



Cellular telephone frequency reuse pattern

Cellular networks offer a number of desirable features:

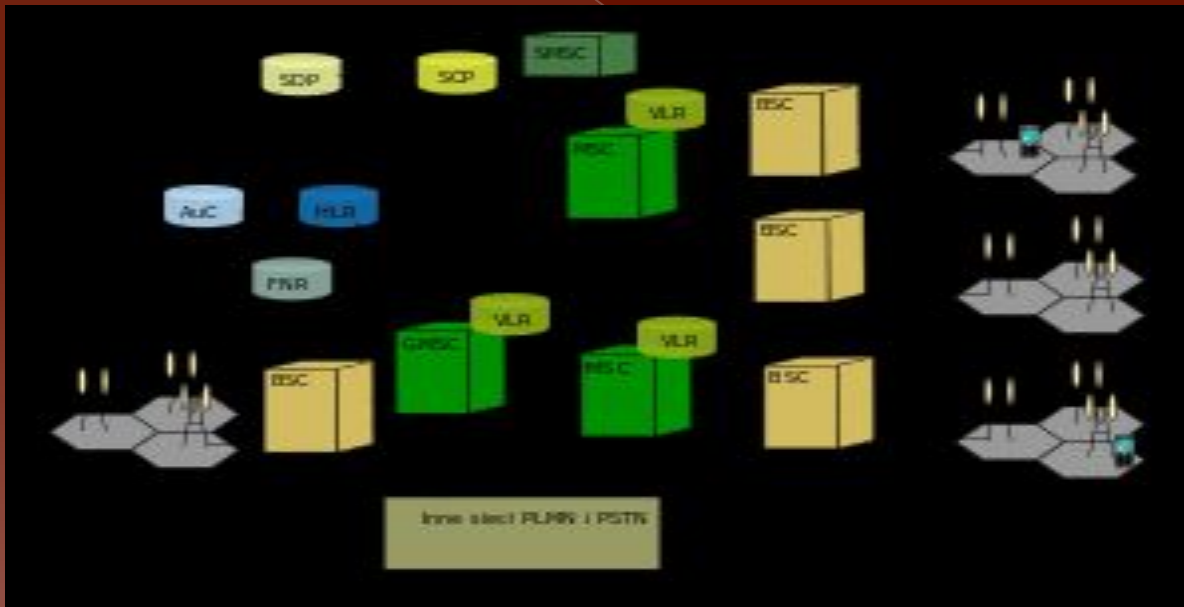
- More capacity than a single large transmitter, since the same frequency can be used for multiple links as long as they are in different cells
- Mobile devices use less power than with a single transmitter or satellite since the cell towers are closer
- Larger coverage area than a single terrestrial transmitter, since additional cell towers can be added indefinitely and are not limited by the horizon

Cell signal encoding

- time division multiple access (TDMA)
- frequency division multiple access (FDMA)
- code division multiple access (CDMA)
- orthogonal frequency division multiple access (OFDMA) were developed

Mobile phone network

- The most common example of a cellular network is a mobile phone (cell phone) network



GSM network architecture

Structure of the mobile phone cellular network

- A network of radio base stations forming the base station subsystem.
- The core circuit switched network for handling voice calls and text
- A packet switched network for handling mobile data
- The public switched telephone network to connect subscribers to the wider telephony network



Mendel

Cellular frequency choice in mobile phone networks

- Low frequencies, such as 450 MHz NMT, serve very well for countryside coverage. GSM 900 (900 MHz) is a suitable solution for light urban coverage. GSM 1800 (1.8 GHz) starts to be limited by structural walls. UMTS, at 2.1 GHz is quite similar in coverage to GSM 1800.



Mobile phone services

- Voice call;
- The answering machine in mobile (service);
- Roaming;
- Caller ID (Caller Line Identification) and AntiAON;
- Reception and transmission of short text messages (SMS);
- Receiving and sending multimedia messages - images, music, video (MMS-service);
- Access to the Internet;
- Video call and video conferencing
- Determination of mobile phone location (Location-based service)



Cellular Communication in Kazakhstan

- Beeline
- Tele2
- Kcell
- Altell



Questions

- 1. What is cellular network?
- 2. Which cellular communications are in Kazakhstan?
- 3. Which gives us cellular network?