

Basic Cellular System

There are mainly two types of Basic Cellular System:

1.Circuit Switched :

In a circuit-switched system, each traffic channel is dedicated to a user until its cell is terminated.

2.Packet Switched:

In packet-switching, the packets are sent towards the destination irrespective of each other. Each packet has to find its own route to the destination. There is no predetermined path; the decision as to which node to hop to in the next step is taken only when a node is reached. Each packet finds its way using the information it carries, such as the source and destination IP addresses.

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Analog Circuit-Switched System

A basic analog cellular system consists of three subsystems:

1. A Mobile Unit
2. A Cell Site
3. A Mobile Telephone Switching Office (MTSO) with CONNECTIONS to link the three subsystems

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3. A Mobile Telephone Switching Office (MTSO) with CONNECTIONS to link the three subsystems

cell

- covers geographical region

base station (BS)

- analogous to B02.1 | AP

mobile users

- attach to network through BS

air-interface:

- physical and link layer protocol between mobile and BS

MSC

- connects calls to wired tel. net.
- manages cell (signalling later)
- handles mobility (more later)

Mobile Switching center

Public Telephone system

Wired Network

The diagram illustrates the components of a basic cellular system and their interconnections. On the left, a red-bordered box defines the terms: a **cell** covers a geographical region; a **base station (BS)** is analogous to B02.1 | AP; **mobile users** attach to the network through BS; and the **air-interface** is the physical and link layer protocol between mobile and BS. To the right, a diagram shows a honeycomb pattern of hexagonal cells. Each cell contains a small icon of a mobile phone. A red arrow points from the 'cell' definition to one of these cells. Two blue rectangular boxes represent **Mobile Switching centers**. Red arrows connect each cell to one of these MSCs. A red arrow points from the 'MSC' definition box to the top MSC. The two MSCs are connected to each other and to a large cyan trapezoidal shape labeled **Public Telephone system**. A red arrow points from the 'Wired Network' label to this shape.

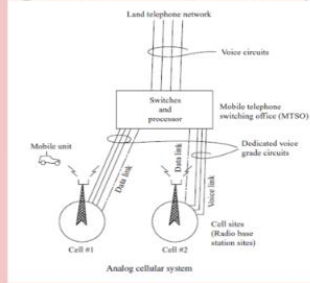
- cell**
 - * covers geographical region
- base station(BS)**
 - * analogous to BS2.1 in A
- mobile users**
 - * attach to network through BS
- air-interface:**
 - * physical and link layer protocol between mobile and BS

- * connects cells to wired tel.net.
- * manages cell setup (more later!)
- * handles mobility (more later!)

The diagram shows two input nodes, labeled (A) and (B), each with a small icon. These nodes are connected via lines to a single output node labeled (C), which also has a small icon. The connections are made through a central vertical line, suggesting a multiplexing or switching mechanism.

Wired Network

Analog Circuit-Switched System



The diagram illustrates the architecture of a Cellular packet system. It is divided into three main sections: User Equipment (MS or UE), UTRAN (UTRAN), and Core Network (CN).

- MS or UE:** Contains a USIM and an ME (Mobile Equipment) connected by a Cu interface.
- UTRAN:** The radio access network, containing multiple Node Bs and RNCs (Radio Network Controllers). The interface between the MS or UE and UTRAN is labeled Uu. Within UTRAN, the interface between Node Bs and RNCs is labeled Iub, and the interface between RNCs is labeled Iur.
- CN:** The Core Network, containing an SGSN (Serving GPRS Support Node) and a GSN (Gateway Support Node). The interface between UTRAN and CN is labeled Iu PS. The interface between SGSN and GSN is labeled Iu PS.

