



# **SNS COLLEGE OF ENGINEERING**

**(Autonomous)**



**DEPARTMENT OF CSE – (IOT & CS INCLUDING BCT)**

## **19EC51X – MOBILE COMPUTING**

**III YEAR/ V SEMESTER**

**UNIT 2 – MOBILE NETWORK**

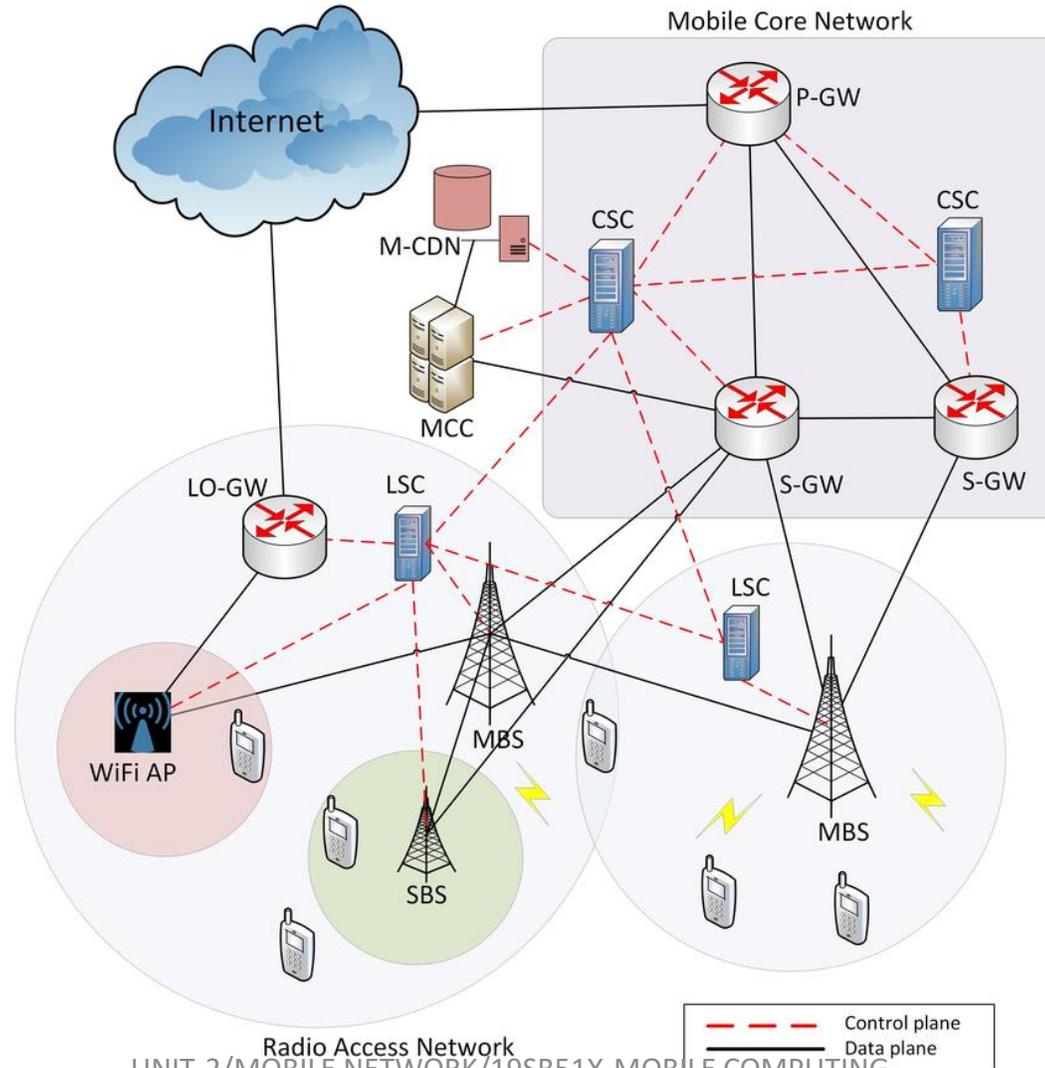
**TOPIC -3- MOBILE NETWORK ARCHITECTURE**



# Mobile Network Architecture

- Mobile networks are the invisible highways that allow our smartphones and devices to communicate with each other and access the vast resources of the internet.
- Behind the scenes, a complex architecture of interconnected components ensures that your voice calls are clear, text messages are delivered, and internet data flows seamlessly.
- Let's unravel the layers of this architecture, from the Mobile Station to the Network Switching Subsystems, in simple terms.

# MOBILE NETWORK ARCHITECTURE





# Mobile Station (MS)

- Imagine your mobile station as your trusty smartphone. It consists of two main parts: the Mobile Equipment (ME) and the Subscriber Identity Module (SIM) card.
- - Mobile Equipment (ME): This is your actual device, like your smartphone or tablet. It's the magic box that lets you make calls, send texts, and browse the web.
- SIM Card: The SIM card is like your mobile passport. It stores your unique identity, phone number, and other essential details. When you insert it into your device, it becomes your digital identity on the network.



# Base Station Subsystems

- Now, let's dive into the base station subsystems. These are the real workhorses that ensure your device stays connected.
- -Base Transceiver Station (BTS): The BTS is like a digital radio tower. It communicates directly with your device, managing voice calls, texts, and data transmission. Think of it as the bridge between your device and the rest of the network.
- Base Station Controller (BSC): The BSC is the traffic cop of the mobile world. It manages multiple BTSs and ensures that each one is working efficiently. If you move from one area to another, the BSC orchestrates the smooth handover of your connection.
- - Mobile Switching Center (MSC): Imagine the MSC as a super-smart telephone operator. It handles call setup, routing, and disconnecting. When you dial a number, the MSC figures out where to send your call.



# Network Switching Subsystems



- These subsystems form the brain of the mobile network. They handle the intricate task of routing calls and data to their destinations.
- -Home Location Register (HLR): The HLR is like a digital phone book. It stores all the important details about you and your services. When someone tries to reach you, the HLR tells the network where you are so the call can find you.
- Visitor Location Register (VLR): The VLR is like a temporary storage spot. When you're in a new area, it keeps a copy of your information so the network knows you're around. It's like checking into a hotel for your device.
- Authentication Center (AuC): The AuC is your network's security guard. It ensures that only authorized devices can access the network. When you insert your SIM card, the AuC checks if it's valid.



# Network Switching Subsystems



- Gateway Mobile Switching Center (GMSC): Think of the GMSC as a gateway to the outside world. When you make a call to a number outside your network, the GMSC connects you to the correct destination.
- Mobile Data Switching Center (MDSC): The MDSC is all about data. It manages the flow of internet data between your device and the wider internet.
- Putting It All Together:

Picture the entire mobile network architecture as a well-choreographed dance. Your device (MS) talks to the BTS, which is managed by the BSC. The MSC ensures your call finds its way through the labyrinth of connections, while the HLR, VLR, and AuC work together to keep things secure. When you want to venture beyond your network, the GMSC takes you there, and the MDSC ensures your internet data travels smoothly.



# In Conclusion

- Mobile network architecture is a symphony of technology, seamlessly connecting devices across the world.
- From your device's mobile station to the network switching subsystems, each component plays a crucial role in ensuring that your calls are clear, messages are delivered, and internet access is reliable.
- It's the invisible infrastructure that powers our mobile communication and keeps us connected, no matter where we are.