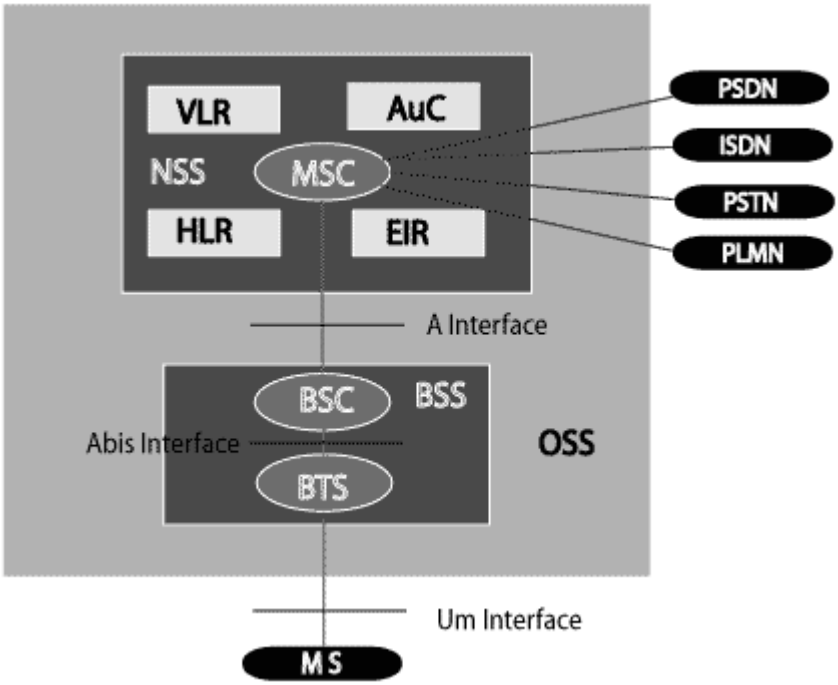
GSM - ARCHITECTURE

A GSM network comprises of many functional units. These functions and interfaces are explained in this chapter. The GSM network can be broadly divided into:

- The Mobile Station *MS*
- The Base Station Subsystem *BSS*
- The Network Switching Subsystem *NSS*
- The Operation Support Subsystem *OSS*

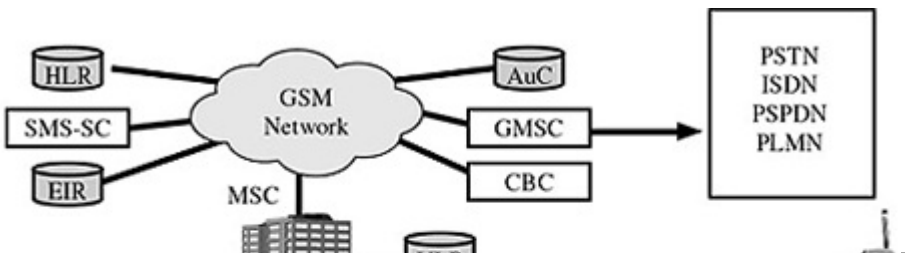
Given below is a simple pictorial view of the GSM architecture.

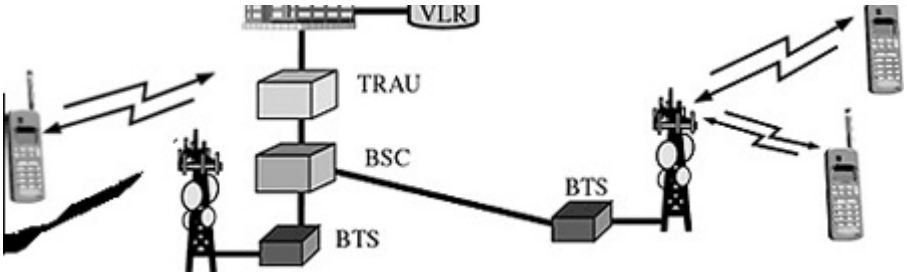


The additional components of the GSM architecture comprise of databases and messaging systems functions:

- Home Location Register *HLR*
- Visitor Location Register *VLR*
- Equipment Identity Register *EIR*
- Authentication Center *AuC*
- SMS Serving Center *SMSSC*
- Gateway MSC *GMSC*
- Chargeback Center *CBC*
- Transcoder and Adaptation Unit *TRAU*

The following diagram shows the GSM network along with the added elements:





The MS and the BSS communicate across the Um interface. It is also known as the *air interface* or the *radio link*. The BSS communicates with the Network Service Switching NSS center across the *A* interface.

GSM network areas

In a GSM network, the following areas are defined:

- **Cell** : Cell is the basic service area; one BTS covers one cell. Each cell is given a Cell Global Identity CGI, a number that uniquely identifies the cell.
- **Location Area** : A group of cells form a Location Area LA. This is the area that is paged when a subscriber gets an incoming call. Each LA is assigned a Location Area Identity LAI. Each LA is served by one or more BSCs.
- **MSC/VLR Service Area** : The area covered by one MSC is called the MSC/VLR service area.
- **PLMN** : The area covered by one network operator is called the Public Land Mobile Network $PLMN$. A PLMN can contain one or more MSCs.