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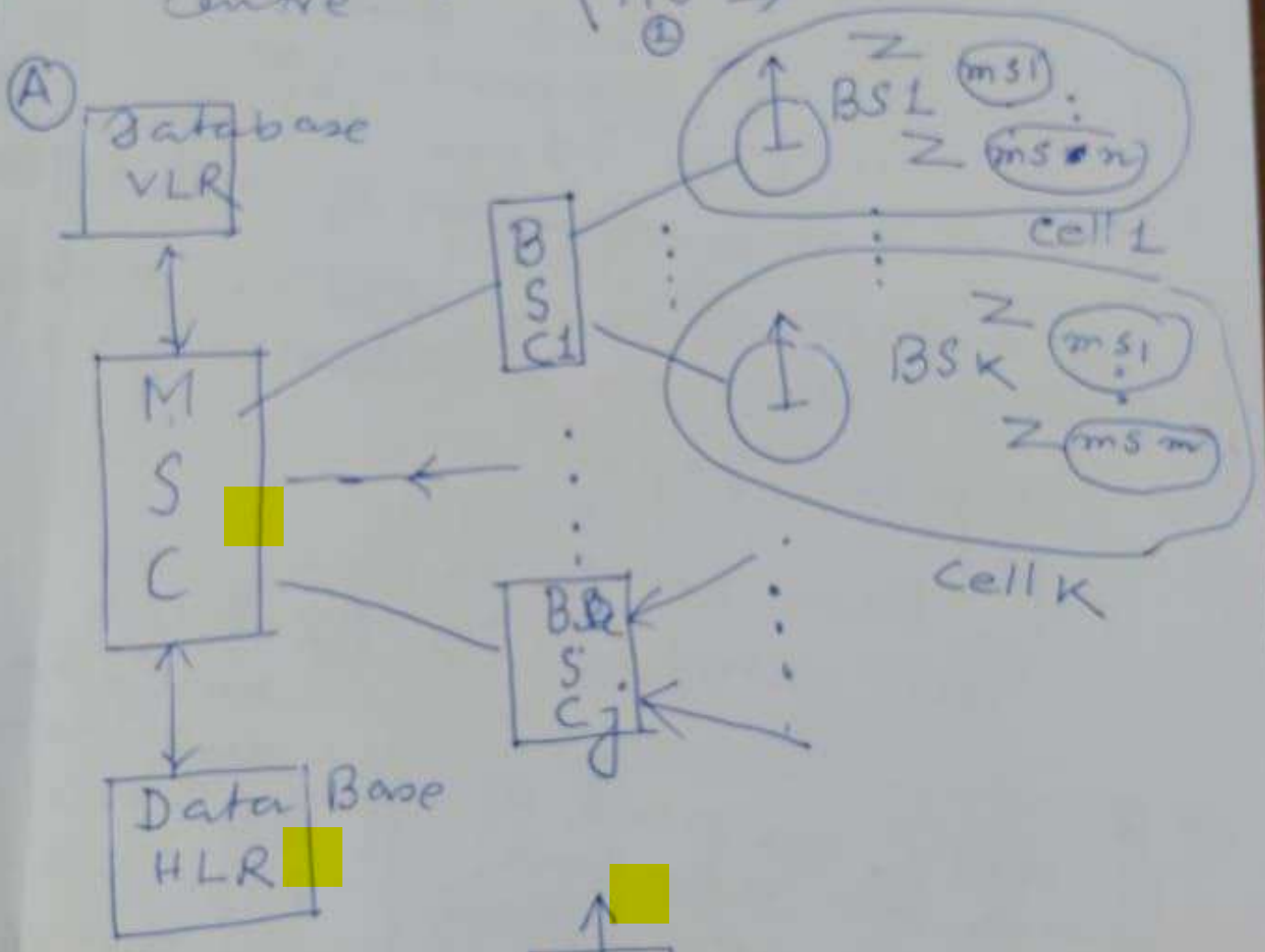
SMCN

Abbreviation: BS ⇒ Base stn.

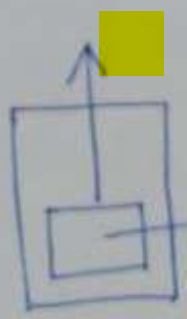
④ MSC - Mobile Switching centre

BSC ⇒ Base stn. controller

MS ⇒ Mobile station



(B) Base stn. ⇒



Base stn Electronics

(c) (i) MS_2 ⇒ 2th mobile

(ii) BS_k ⇒ kTh Base stn.
- Each base stn covers a cell
- There are n numbers of mobiles | cell

(iii) Each Base stn has an Antena and Base stn Electronics – a Computer Device.

(iv) Base stn to mobile has air interface : ② up link and down-link channel pair for voice/data

For data, one pair of uplink and downlink channel for source and destination mobiles.

& Per mobile, 2 of source destination mobile on different calls

① destination in same cell, then for voice one uplink and one downlink ② of source and for both

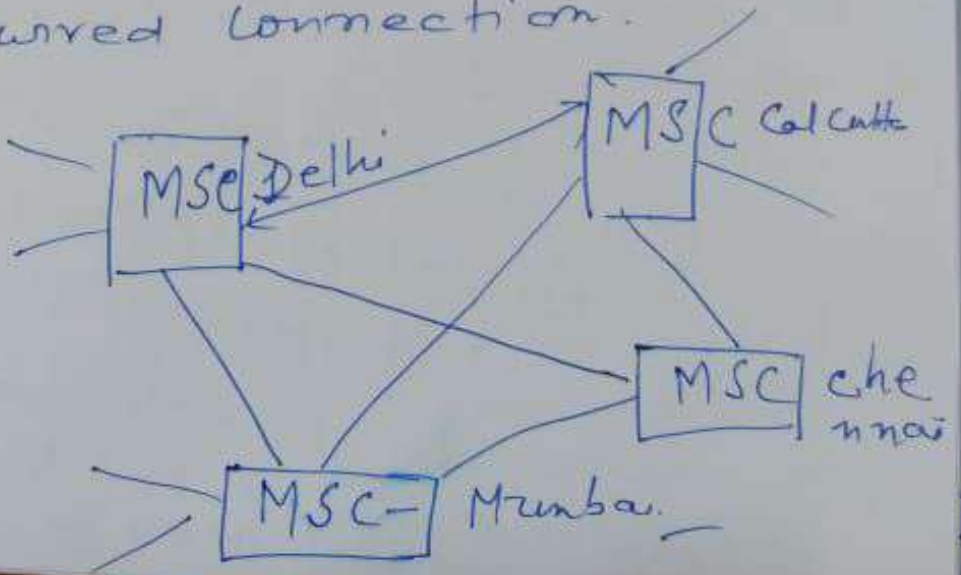
(V) – Base station Controller (BSC)

→ (a) One base station controller, controls a number of Base stations.

(b) Number of Base station are controllers connected to an MSC (Mobile Switching Centre)

– Each MSC for a service Prouder / city

(d) The MSC in diffirent cities are interconnected by wired connection.



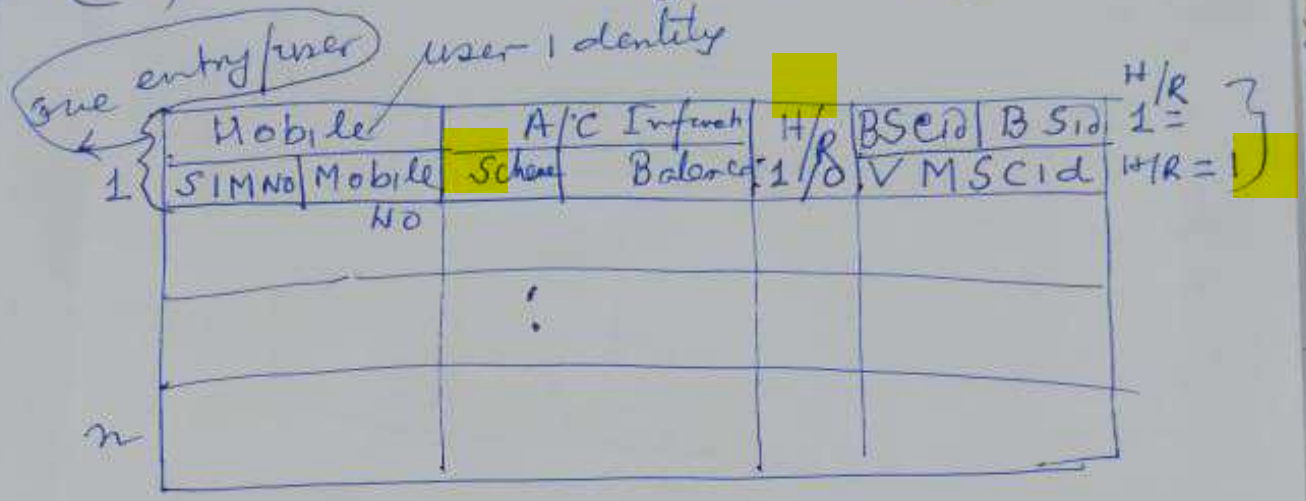
(VI) All BS, BSC, MSCs are interconnected by ~~Wide Area Network~~ wired network forming an WAN (Wide Area Network) Packed switched.

(VII) Each MSC has the following two data bases

(a) HLR (Home Location Register) user - Mobiles who are registered to a service Provider in a city, Their information is stored in this table one entry/user.mobile:

(b) VLR (Visitor Location Register) - Mobile who go for roaming in diffirent city Their information is stored in VLR: one entry per visitor Mobile.

(VIII) Structure of HLR of Home MSC



(IX) VMSC ⇒ Visting MSC

MSC → HMSC (Home MSC)
- MSC for an Mobile user where his data base is created under a Service Provider during initial Registration (during the purchase of SIM card)

VMSC - Data base for Roaming mobile users are created Here.

(X) Structure of VLR

Mobile user id	A/C information	BSC id	BS id

} one entry per Roaming user

(XI) ~~Location updation~~

(a) ~~Every~~ Mobile sends Location ~~Updation~~ Message (LUM) using ~~control~~

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(XI) (B) Location updation

(1) Every mobile sends Location updation message (LUM) to its Base stations using dedicated control channel.

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Type | Location updation message (LUM)
Base station id | mobile No of sender (source)
BSC id No | Blank
| Blank

(2) Base station shall forward this message to its BSC adding its Base station id

LUM
Source Mobile NO
Base station NO
blank | BSC NO

BSC

(3) Base station Controller shall put its own id into the message and pass to its MSC.

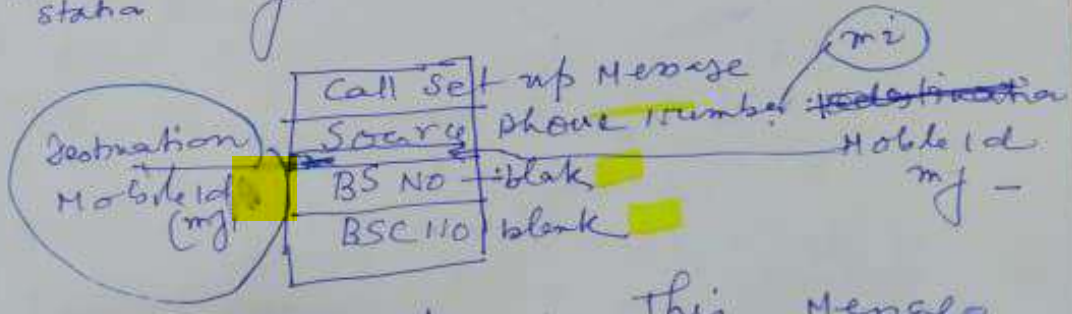
LUM
Source Mobile id
Base station id
Base station Control id.

(4) MSC shall check from the database of its home MSC of the Source Mobile.

Call setup

(5) m_i calls to m_j in its own call of Home MSC.

- m_i sends Call setup request Message to its Base station using dedicated control channel



(6) - Base station passes this Message to BSC using its identity.
- then BSC passes this Message to its MSC using its identity.

~~Page~~ when message reaches MSC

⇒ (Page 09)

Call setup Mess
Source Mobile No → destination id. (m2)
Base stn id
BSC id.

(7) MSC check wheather it is the Home MSC of the source mobile (H=1)

Yes / No → shall be descussed later

(8) then MSC shall check weather source is having sufficent balance — yes.

(9) Then check if it is the Home Location of destination phone (H=1)

Yes → shall be discussed later

(10) checks if the destination is busy

Yes → MSC gives message to source that destination Busy

No → (11) allocate one uplink and down link channel for both since they are in the same cell (ie base stn of m1 and m2 same)

If channels not available then Network busy message.

(use of paging channel, grant channels discussed earlier.

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(12) m_i Calls m_j in different cell of same Home MSC — like step 5

(13) ⇒ step 5 —

(14) — like step (6) —

(15) like (7) —

(16) like (8) —

(17) like (9)

yes

(18) check if the destination is busy like (10), in different cell of same MSC

(19) Base station under order of MSC (Message Exchange Between MSC and Base stn)
Allocate one uplink and down link channel to m_i —
And other Base station allocate another pair of uplink & downlink channel for m_j — ⇒ Inform about group channel to both calls.

(20) Conversation starts

(21) After Conversation Then pressing Red button

(22) Call break up message is sent by BS to MSC using BSC.

(23) MSC breaks the call and tell Both Base stations to reclaim back Their uplink and downlink channels.

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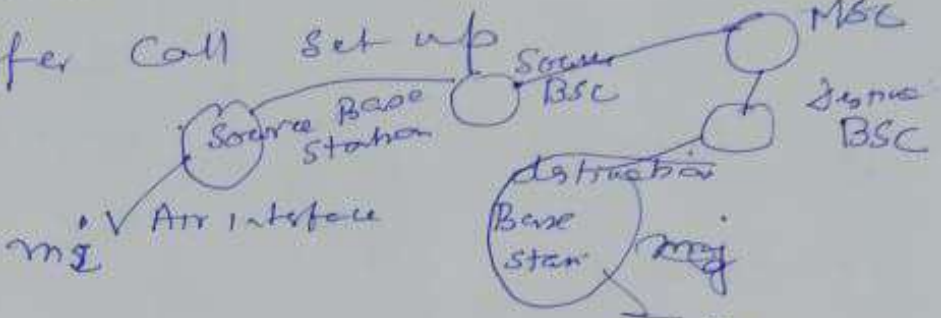
Base station

(24) Call set up is packet switching from Source Base stn → Source BSC → MSC → destination BSC → destination Base station through packet exchange

(25) After Call set up



(i) Two air interface

(ii) Source Base station to destination Base station circuit switched both from source base station to destination Base station through BSC & MSC

(26) Above two air interface uplink/downlink channels are allocated by Base stn and also the circuit switched path from source to destination Base is created using SS7 signalling protocol.

(27) During Call break, the uplink and downlink channels are reclaimed back by the Base stations and the circuit switch path is broken.