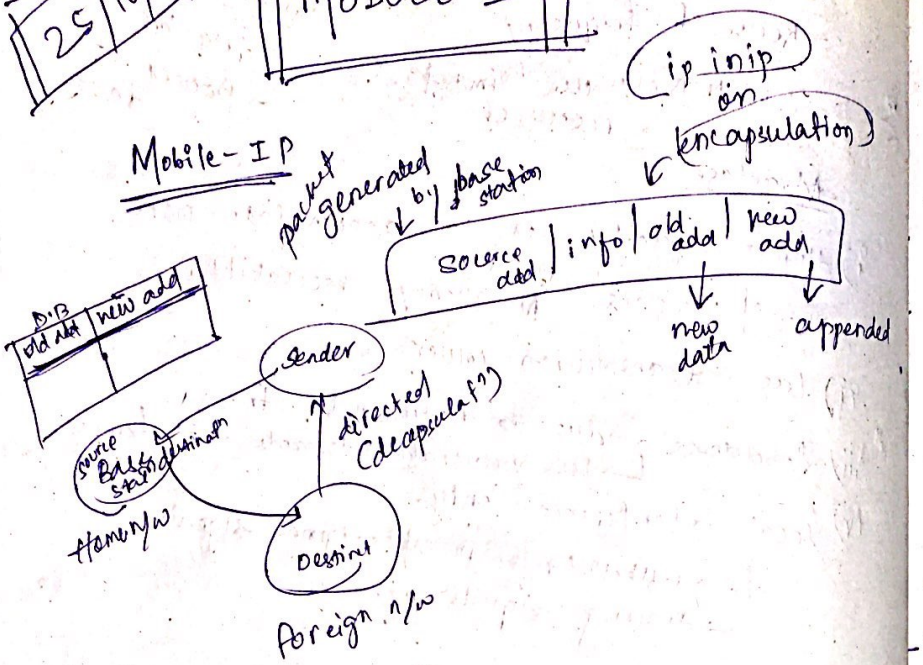
25/10/19

MODULE - II

Mobile-IP



* decapsulation - occurs when the packet reaches at final destination

Whole process is known as mobile-ip.

The Requirements of Mobile-IP

* To solve the problem caused by DHCP protocol to save space & time
* Compatibility - It is compatible to sender without knowing the portability of destination we can send the data.
* Scalability - irrespective of multiple no of n/w
* Transperancy - sender must not be known with movement of receiver.

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Terminologies Used

① Mobile Agent (i.e the mobile device)
It is the device which communicate with another device in the mobile n/w but in the concept of mobile ip. The mobile agent refers to the device which moves from one cell to another cell in the means of communication.

② Home Agent
It is the base station in the home n/w of the mobile agent means the first n/w of the commenicating device where it has got registered itself is known as the home n/w & the supporting base station is known as home agent.

③ Foreign Agent
When the mobile device moves away from its home n/w & enters into another n/w known as the foreign n/w & the supporting base station in the foreign n/w is known as foreign agent.

④ Home Address
The identity or the ip address applied by mobile agent in home n/w is known

as home address.

⑤ Care of Address

The logical address of a mobile agent in the foreign n/w is known as care of address.

⑥ Home Database

The details of the authenticity of a mobile agent in the home n/w is known as the home DB.

⑦ Visitor's Database

The details of the authenticity of a mobile agent which has move away to the foreign n/w is known as the visitor's DB.

⑧ IP in IP

When the data packet attached with the source & destinat^n addresses reaches in the home n/w of a mobile agent which has already move to another foreign n/w is stated as a datapacket itself with new source & destination. add. which is known as IP in IP or encapsulation. & the arrival of the encapsulated packet from the home n/w to foreign n/w is known as tunneling.

⑨ Triangular Routing

When the mobile agent moves away to home n/w & enters to foreign n/w the whole support provided by the mobile ip protocol to keep in touch with the mobile agent with which the device is still communicating is known as the triangular routing.

⑩ Registrat^n

It is the process of acquiring the logical address in the home n/w or in the foreign n/w by requesting to the home agent or to the foreign agent before the comm^n starts.

1. Mobile services and archit of GSM.
2. Radio interference
3. cancellation of CDN
4. security and new data services in GSM — voice comm, data comm. (GBRS) } diff bandwidth
5. Wireless app protocol architecture (5 layers) = functions
6. Bluetooth architecture (system architecture)
7. Bluetooth protocol architecture.
8. wireless Lan IEEE 802.11 (& all protocols)
9. GPRS architecture and communication.
10. DHCP

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1 Mobile IP

Stage-① - Agent discovery

polling - broadcast - the server will go on sending
selection
if : to the nearby client
the server responce to particular client based on FCFS.

The substages are ① Agent advertisement
② Agent solicitation

~~stage ② - Registration ②~~

Stage-② - Registration

Substages ① Registration Request
② Mobility binding through registration reply

* Stage-③ - Communication
bandwidth

* Stage ④ - Tunneling & Encapsulation
A tunnel establishes a virtual pipe for data pckt b/w a tunnel entry & tunnel endpt

* Stage ⑤ - Reverse Tunneling

disadv
- remote area not feasible
- money/manpower
- bandwidth and maintainance

Mobile ad-hoc network

~~where infrastr is available~~ (if possible)

- no infrastr. is required at all to setup ad hoc n/w only if the devices are in the range ~~to set~~ of each other, they can immediately form a network
- The n/w as well can be formed in the remote areas in case of disasters even, hence highly robust.
- The cost of forming the n/w is too less. i.e it is highly cost effective.

- Routing -

The requirement of routing in ad-hoc n/w -

① Have to choose the best path b/w the source and destination node so as to make the 3 objective of comm successful

① correct destinat°
② Timeliness
③ ~~Corre~~ Correctness

② bcz of The asymetric links

③ bcz of Presence of the redundant links there might be chances of flooding of the data. So the routing protocol help to overcome the flood.

④ Dynamic Topology -

Just bcz the ad-hoc one, the probability of the availability of the same node, address, hence it leads to the dynamic topology formed.

- So we require the routing protocol to support the dynamic topology

⑤ Interference

The protocol should be choose the best part with least interference.

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GSM

BSC

PSTN

ISDN -

SS7 - signaling system 7

Infrastructured Based N/w

BSS - Base station subsystem.

The BSS consists of 2 things.

① Mobile station
② Base station

NSS - it consists of MSC

HLR
VLR

EIR

OSS - protocols to communicate with other architecture

ⓐ Mobile s/m
ⓑ BS
ⓒ Base stat° control (BSC)

Mobile s/m - 2 element included

① Mobile equipment - portable
- identified by IMEI no
- used for voice & data comm
- it monitor power signal quality for data handover.

② sim
- it contains IMSI no.

BSS -

BSC - It manages radio resources freq and timeslot

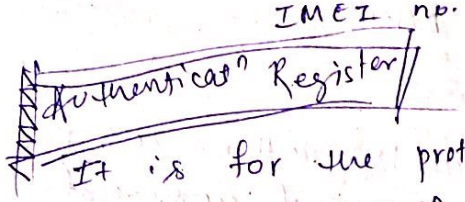
NSS

It manages the switching funct of the s/m.
Allows MSCs to communicate with other n/w such as PSTN or ISDN.

- It provides the billing.

VLR -

EIR - It maintains the D/B to keep track of the mobile set through the IMEI no.



It is for the protectn & the security, manage the authenticatn key & security.

Oss - Operational Support subsystem.
It supports the oprn & maintainance of GSM through several OMC (oprn Maintainance center)

The functn of OMC -
1) It maintains all the h/w & protocol in GSM

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When our communicating device moves away from the home n/w, the strength of assigned to it becomes weak.
Hence it is more vulnerable to the interference.
so a fresh strong freq. band should be assigned and the switching from the old one to the new freq. band is known as handover.

→ If in a particular area the cond is too high so as to go for the freq. reuse concept the earlier freq. band sometimes be withdrawn and a new frequency will be assigned to an user.

→ The change of the carrier frequency is also known as handover.

→ Types of Handover in GSM

- Intracell handover -

If the congestion becomes high within a cell the change of carrier frequency of communicating device is called intracell handover.

- Intercell but Intra BSC -

When the user moves from one cell to another cell the service has to be handed over from one base station to another base stath to avail the uninterrupted communication.

* And as the BSC takes care of bunch of cells or base stations this may happen that the user still may be within the same BSC.

Hence the naming justifies.

- Inter BSC or Intra MSC — Mobile Switching Center.

for outside of a BSC falling within the same MSC.

- Inter MSC

When user moves from one MSC to another.

All the handovers are applicable if the s/m is using TDMA.

But if the s/m uses the CDMA the handover is of 2 varieties.

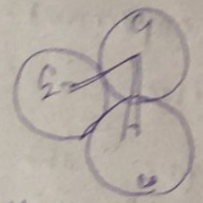
① Hard handover
② Soft handover

① Hard handover

All the varieties cited under GSM are coming under hard handover. They are -

the change of the carrier frequency is difficult & time taking.

- smooth handover.



② Soft handover

* On CDMA based architecture the mobile user is always connected to min^m three base stations from which it is getting the strongest signals.

* If at all the user moves, the carrier freq. needn't change suddenly rather it becomes smooth & hence the change is known as the soft handover.

Radio interfaces in GSM

UM, Abis, A, O

priority of voice service ↑

The GSM MS used the UM interface to talk to BDS.

GSM 1900 uses 124 channel each of 200 kHz width.

GSM 1800 uses 374 channel each of 200kHz width.

Abis

It is used when the base station talk to each other or talk to the BSC.

So, it consists of 60/64 kilobit connect^n speed, which are within 10mt - 35 km depending on the environment.

A interface

used for the comm^n b/w the BSC & MSC. It uses 2.048 Megabits/sec.

The modul^n variety is pulse code 30 (PCM)

O interface

This is the type of signalling used for comm^n b/w the MSC and OMC.

SS7 - Signaling S/m 7

Types of channels & control channel.

- traffic
- control < common control channel
  dedicated "