CNS - V2

Date :
Page : 1

Krushna N

:— Wireless ½A-1W
Standards

Question Bank :-

① Explain The diffn between Ad-hoc
Network & Infrastruture based
wireless network.

② write short Note on IEEE 802.11

③ Explain IEEE 802.11 mac sublayer

④ Explain Power management in 802.11
mac infrastruture network & Ad hoc netw

⑤ Compare various IEEE 802.11 x
standreds

⑥ write short Note on Bluetooth.

⑦ Explain Bluetooth & Protocal stack
with it's limitatution

⑧

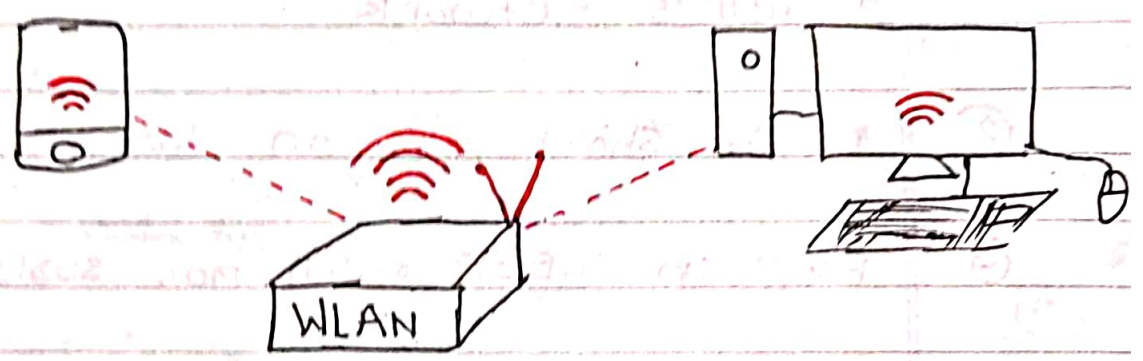- **WLAN** _ wireless Standards ?

wireless Local area Network

- Growing fast network Technology
- Provide connectivity to computer to Network over short network area

WLAN

- use for short Range & small grp
- No Needs of cables.

Advantages	Disadvantages
• Mobality	• Quality of Network
• Low implematation cost	
• Instalation speed and Simplicity	• Restrictions
	• Seafty & security
• Network expantion	• Proopiratary sol^n.
• Reliability	
• Scalability	

- There are two types of WLAN.

  - Infrastruture Network
  - Ad hoc Network

- <u>Infrastruture Based WLAN</u>

AP1

wired Network

AP2   AP3
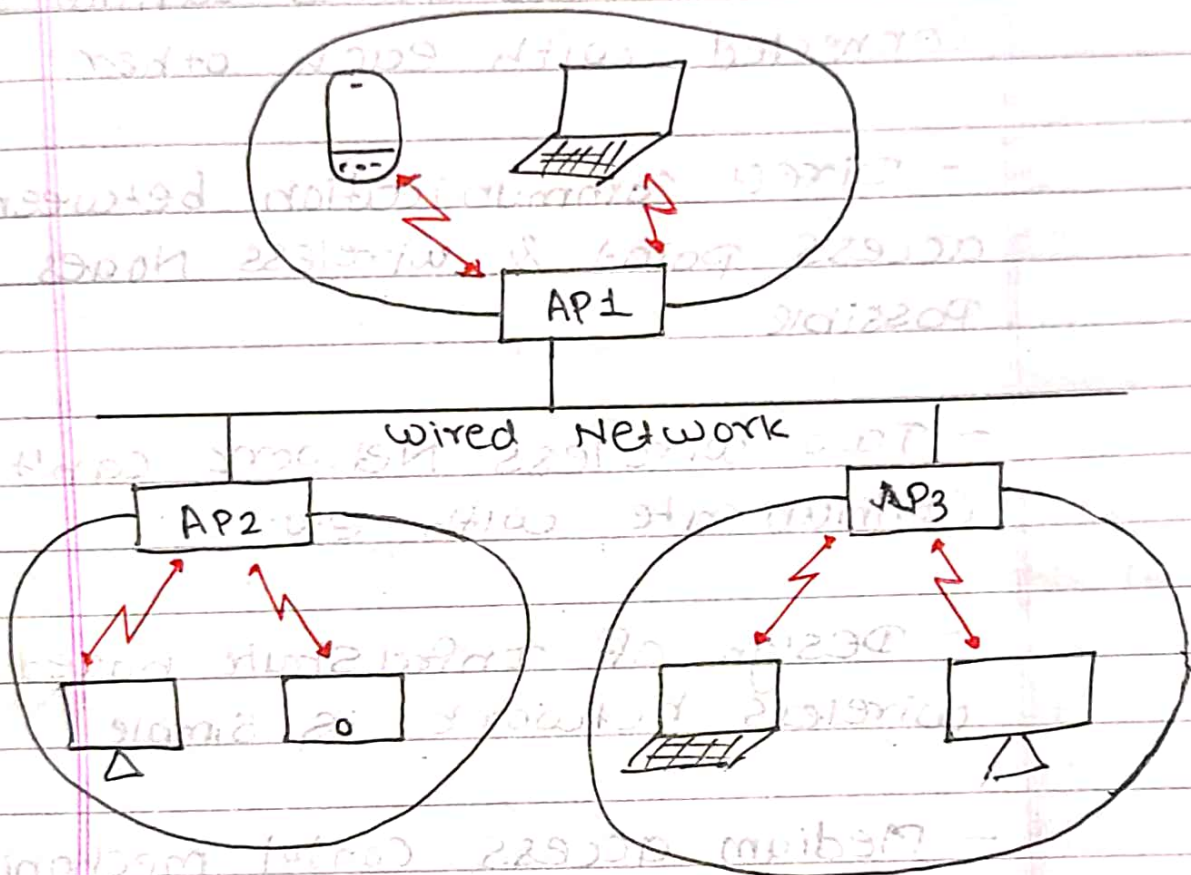
<u>AP</u>: Access Point

- It Control medium access & it act like bridge between the existing wireless network & other network.

- Access Point Provides internet to diffn - diffn devices

- All access Points are directly conne cted with each other

- Two wireless Nodes cannot be connected with each other

- Direct communication between access point & wireless Nodes is Possible

- Two wireless Network can't communicate with e.o.

- Design of Infra Struke based wireless network is Simple

- Medium access Contol mechanism is Possible So that there is No Collusion.

(explain how data Packets will get toans fered).
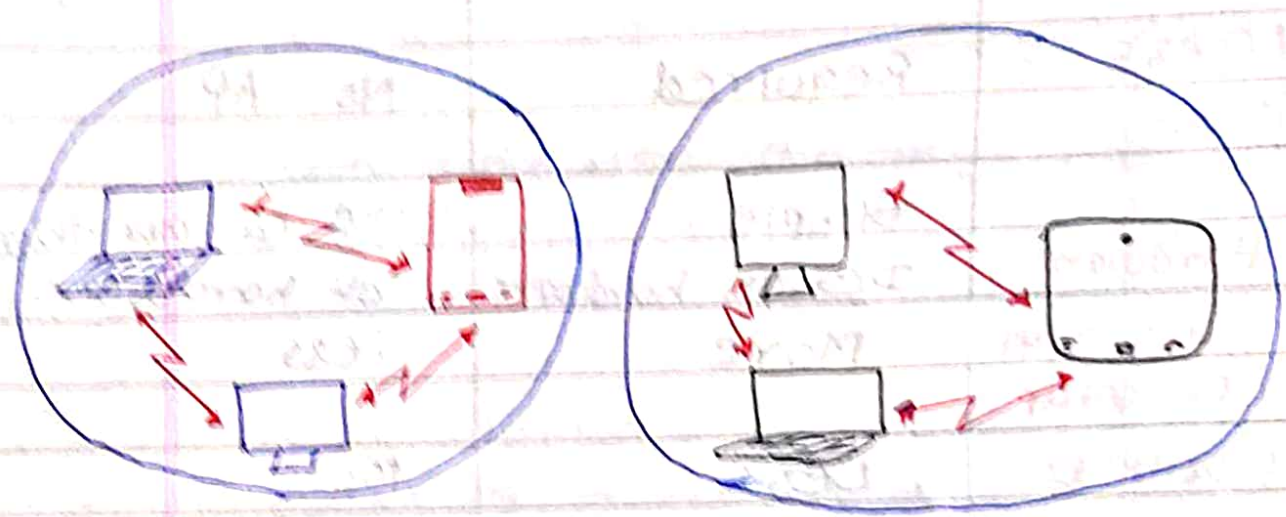
- Ad Hoc Network:

- Dosen't Need any Infrashtute to work.
- It is a temporary Network
- Nodes will come in the network then communicate with each other then nodes can leave the Network
- No need of Access Point each node communicate with e.o. simulessly.
- In Ad hoc Network complexity of each network as of is higer
- Nodes not Belongs to Same network can't communicate with each other

Parameter	Infrastructure	Ad hoc
Access Point	Required	No AP
Hardware	Simple Design hardware	More complex design of hardware
Time require for setup	More	less
flexibility	Less	more
Limitation on range	Larger range	Limited (smaller) range
Communication with other when not in range	Can be done via AP.	Not Possible

- IEEE 802·11

- IEEE 802·11 is also known as Wireless fidelity (wifi)
- Design to use limited geography area
- It is a WLAN Technique.
- It Support 2 additional feature
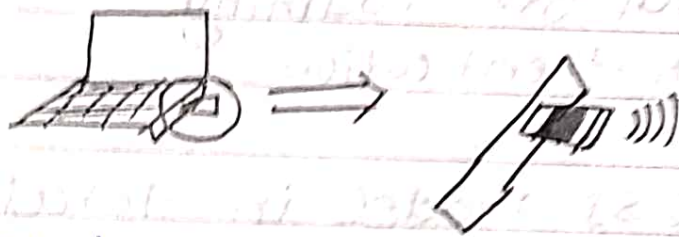   - Power management
    - Security mechanism

- Uses 5 GHz Band (High freqs)
- It has 23 ovelapping Chanells

- Can also use 2·4 GHz with only
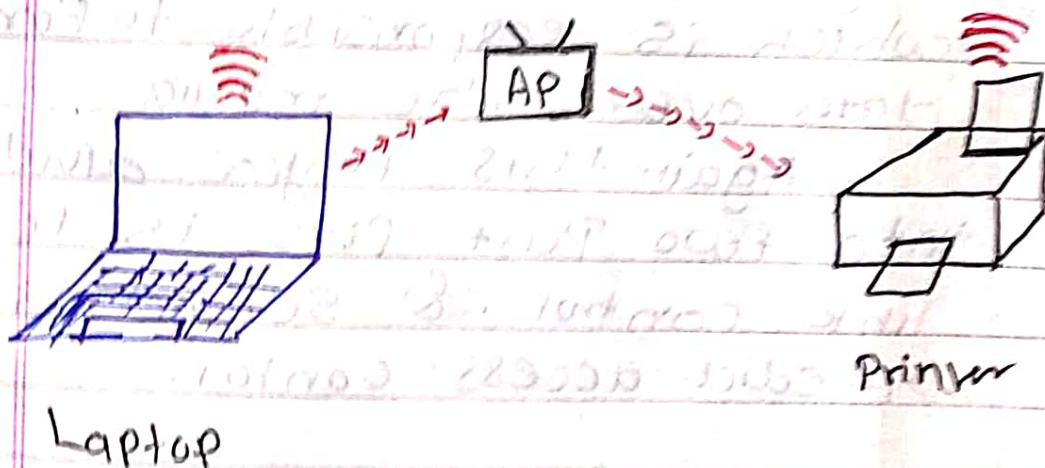3 ovelapping Chalus

• wsifi adapter

It is a small device that enables computer to connect other electronic device with the help of WiFi.

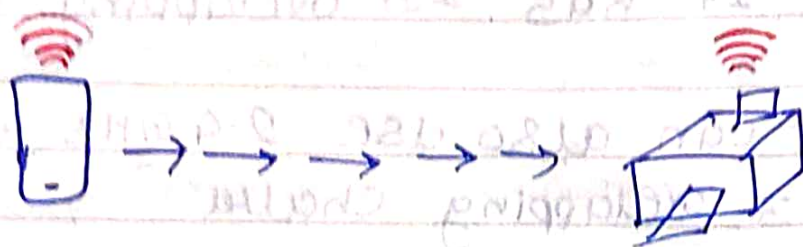It is a type of NIC (network interface controller)

• Modes

① Infrastuture.

Laptop   Printer

2. Ad hac & wifi direct

IEEE 802.11 MAC Sublayer.

— Mac stands for medium access control.

— Tasks Performed by mac are.
- Control medium access
- support roaming
- Authentication

The OSI model in total 7 sublayer inwhich the second layer is Data link layer which is responsible to forward data over the media
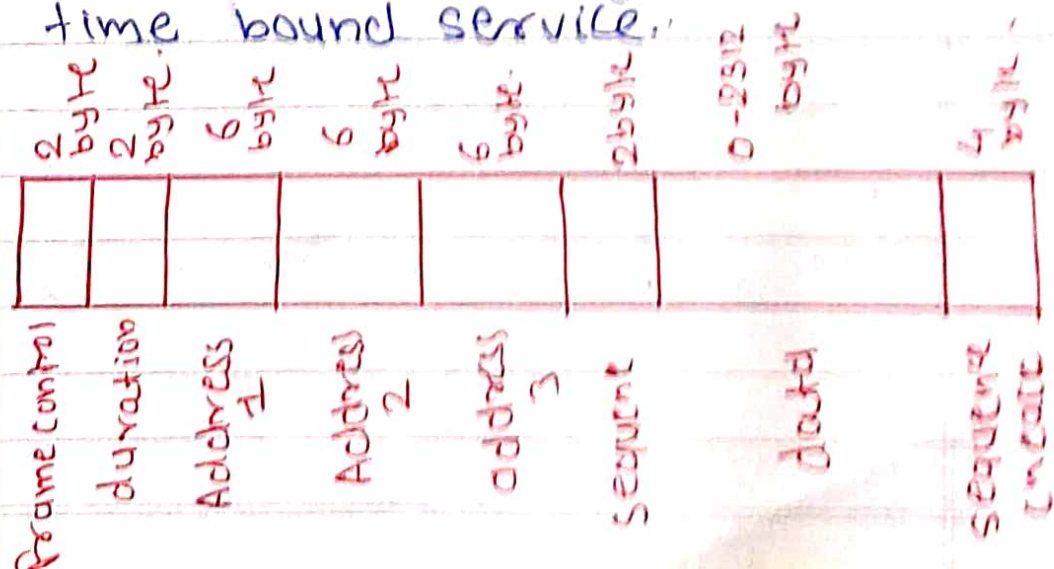Again this layer divided into two Part first is logical link control & second is media access control.

Basic services of MAC/PC

1. Asychronous Data Service
                    (Mandatory)
2. Time bound service
                    (optional)

Here Ad hoc model offers only asychrous data service wheather infrasrctume model offer both time bounded & Asychrous data service.

Three basic access mechanisms.
1. Method Based on CSMA/CA
        Carrier sense multiple access/ collusion avoidance
2. Method to avoid hidden terminal Process.
3. Contnsion free polling method for time bound service.

2byte	2byte	6byte	6byte	6byte	2byte	0-2512 byte	4byte
Frame control	duration	Address 1	Address 2	address 3	Sequent	data	sequence chect

- Sychronization
- Power management

- ## Bluetooth

What is Bluetooth

It is technology used to connect mobile with their peripheral.

It is an open standred that allows communication between diverse devices.

Bluetooth is a Wireless local area Network (WLAN) technology that we use to exchange data over Smaller distance

- It has limited coverage, can cover data between 10m appox.
- dosen't require any kind of infrastruture
- It is an example of Ad hoc network
- Compare to wifi it is slower and limited range
- It apply FHSS with 1600 hops hopping rate
- Communication speed is less than 1 MBPS.

Advantages

→ easy to use
→ Low cost (Free)
→ No need of infrastruse.
→ Wireless technology
→ No need of internet

Disadvantage

→ Low range
→ Less speed for data transfer
→ Security issue.
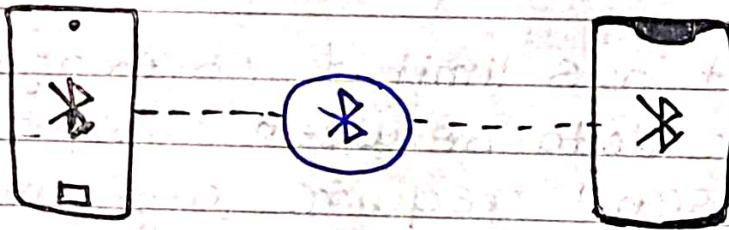
- ## Bluetooth Protocall Stack

① Piconet   ② Scattred net
③ master Unit   ④ Slove unit
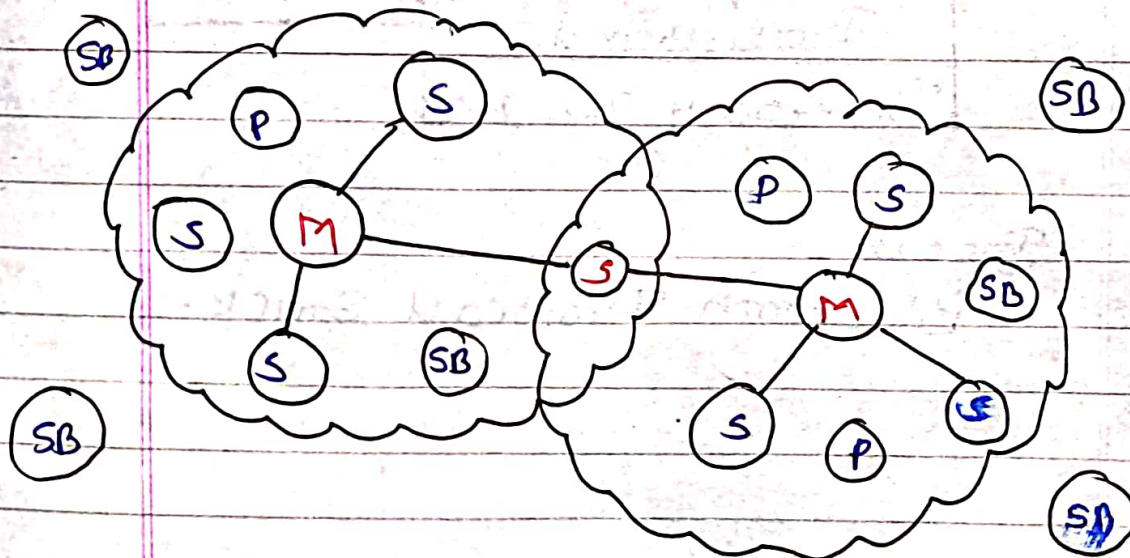⑤ Parked unit   ⑥ Standby unit

- ## Piconet

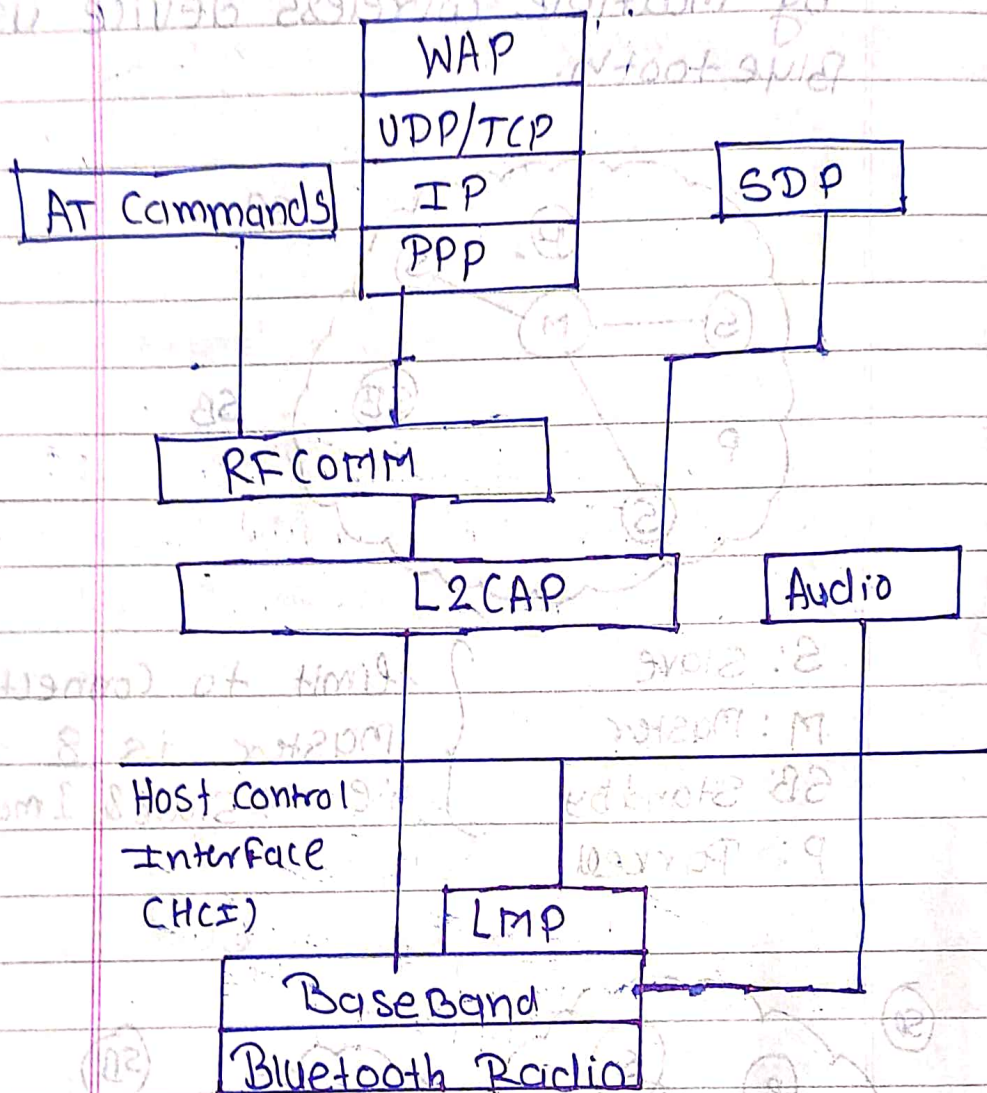It is a network connected by multiple wireless device using Bluetooth.
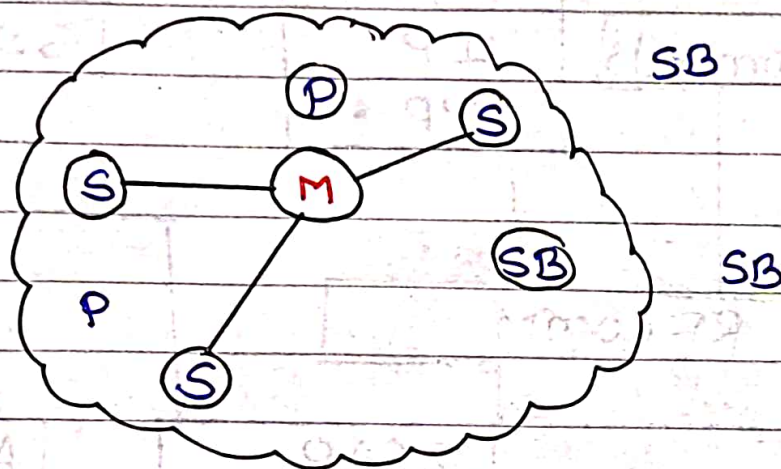
S: Slave
M: Master
SB: Stand by
P: Parked

} limit to connect master is 8
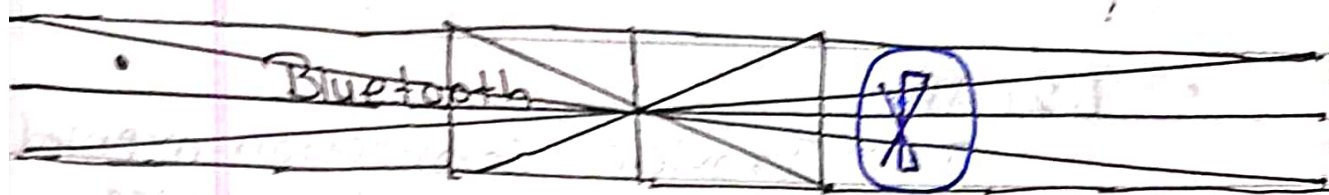i.e. 7 Slave & 1 master

- ### IEEE 802.15.1 (Bluetooth).

```
                    ┌──────────┐
                    │   WAP    │
                    ├──────────┤
                    │ UDP/TCP  │              ┌──────────┐
┌──────────────┐    │   IP     │              │   SDP    │
│ AT Commands  │    │   PPP    │              └──────────┘
└──────────────┘    └──────────┘

        ┌──────────────────────┐
        │       RFCOMM         │
        └──────────────────────┘

     ┌──────────────────────────┐   ┌──────────┐
     │         L2CAP            │   │  Audio   │
     └──────────────────────────┘   └──────────┘

 Host Control
 Interface
 (HCI)
                    ┌──────────┐
                    │   LMP    │
              ┌─────┴──────────┴────┐
              │      BaseBand       │
              ├─────────────────────┤
              │  Bluetooth Radio    │
              └─────────────────────┘
```

~~Blooth~~

Bluetooth Protocall Stack.

Bluetooth

- Bluetooth Core Protocall:
    LMP, L2CAP, SDP

- Core replacement Protocall:
    & RF Comm

- Adopted Protocall
    PPP, UDP/TCP/IP WAP

Base Band:
It is a Physical layer of the bluetooth protocall stack.
It mainly manage Physical chaneus of bluetooth.

LMP (Link Manage Protocall)

: It identify when 2 bluetooth devices comes in nearby
It helps to link 2 devices also helps to discover new devices
It manges Security also.

- **L2CAP:**

  It Provide connection oriented and connection less data service to the upper layer protocall.

  It is responsible for segmentation of large Packets & multiplexing of bluetooth Packett.

- **SDP**

  Service discovery protocall

  → Responsible to join bluetooth device to Piconet
  → with helpof SDP device enquire about service of mode.

- **Cable Replacement Protocall RFcomm.**

  It is a serial communication protocall Based on ETSI
  It Provide relaible dat stream multiple concurrent Connections, Flow control & serial linsc setting.
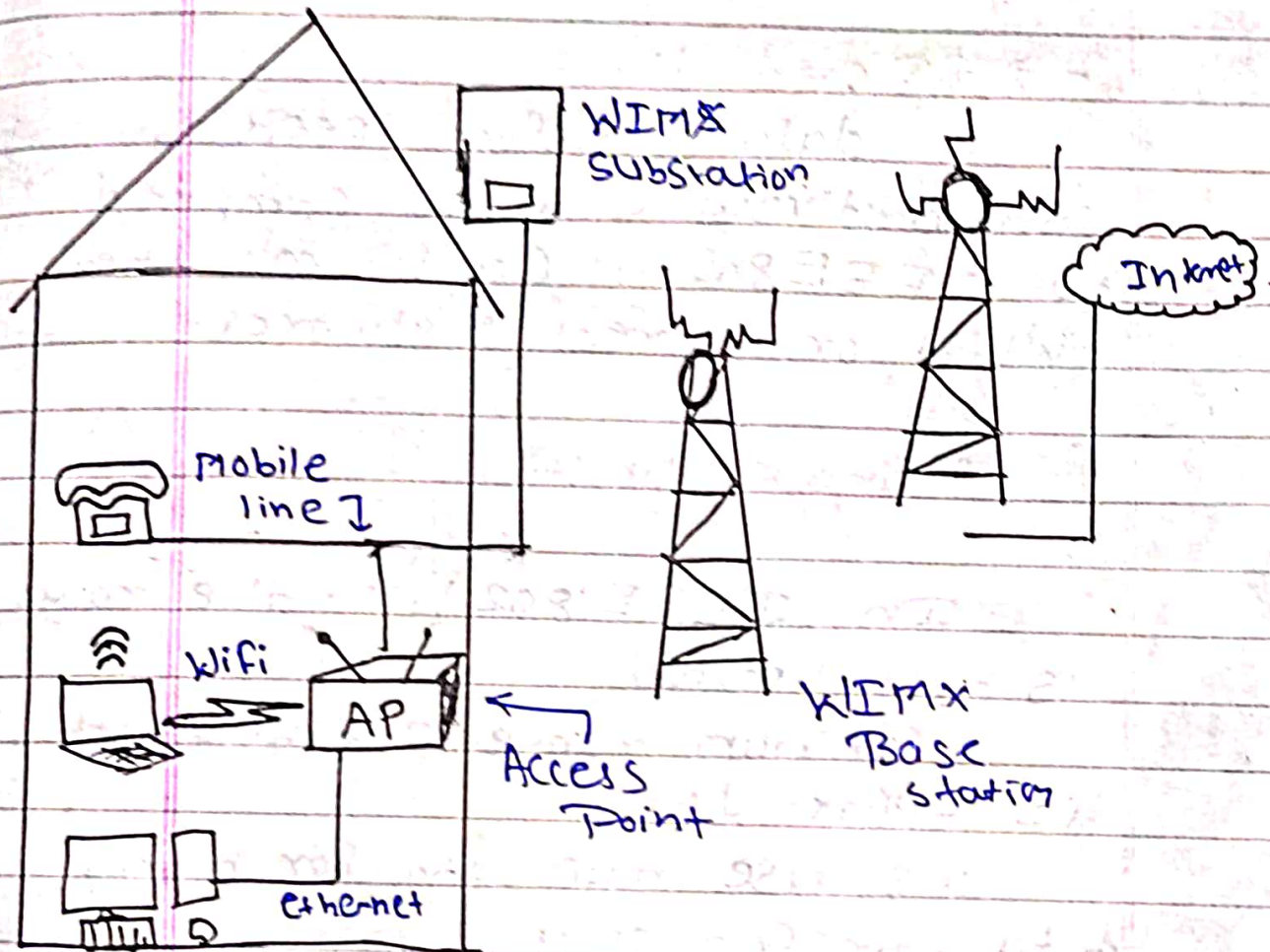
- ## Architeture of WIMX

fig Architeture of WIMX

W : world wide
I : introperability for
m : microwave
A : access
X :

• limitations of Bluetooth.

→ Speed limit
    data transfer speed is comparitively slow as compared to IEEE802·11 (wifi) or other WLAN or wired Networks.

→ Range limit

    In IEEE 802·15·1 the range is also limited.
    Maximum range for bluetooth is appox. 10 m.
    we use bluetooth for nearby data transfer only

→ Band with limit
    Bluetooth devices has limited smalled band with.

• Applications
  – headset
  – Sound & speakers
  – remote
  – sensors.
  – Laptop / mobiles.
  – MP3 players etc.