

Thursday → 6-7-8 Quiz-3

Friday → 6-7 Quiz-4

Quiz-3 → OS.

Quiz-4 → Till today

Exam → Unit -2 - If (till today)
70:30 ✓
60:40

USB - OTG. → ADP
→ SRP
→ HNP

Commⁿ Protocol → ① Packets.
② Plug & Play.
③ When connected, host obtain
④ Config & Prop
⑤ Unique ID to Identify. device(w)

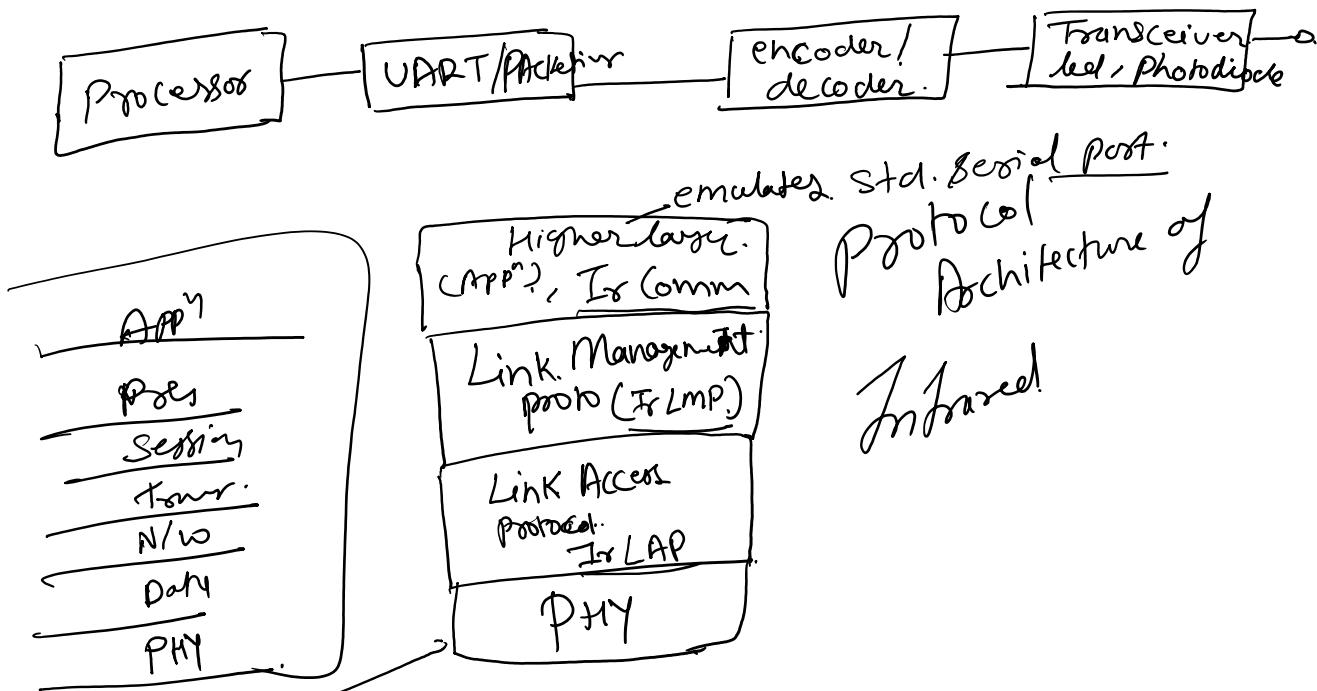
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Device class → Each device has a unique.
ID b/w 0 to 127 (device descriptor)

Classes:- display, Commⁿ, audio, Mass Storage.
& HMI (Keyboard, front panel, Control Panel etc..)

Infrared → used in TVR, VCR, AC etc.

IrDA → Infrared data Association.
founded in 1993



Phy :- Provides operation from Contact.

- wireless P2P link.
- data packet are protected using CRC
- Data transmission from 9600 bps.
- Data range - 1 meter.

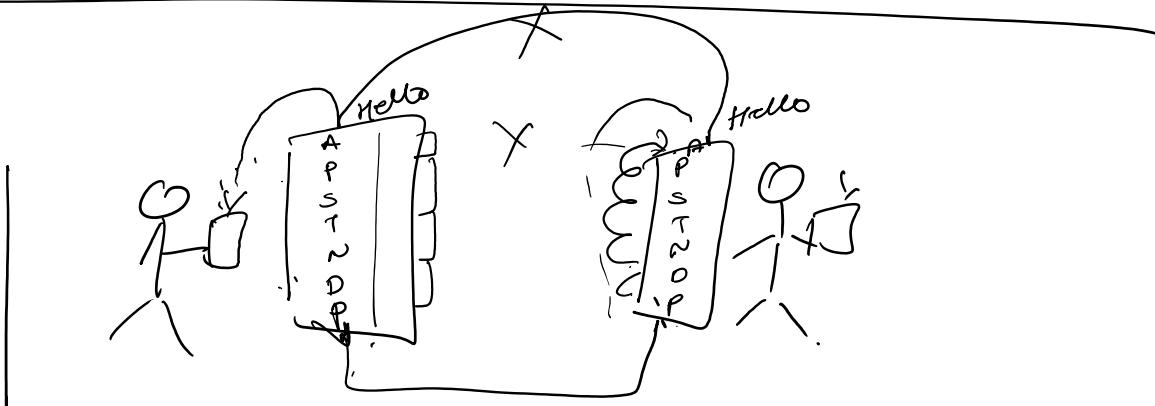
IrDa Contr → 5 meter.

IrLAP → Provides d2d connection.

- Device discover. Procedure
- handles hidden nodes

IxLMP

- ↳ Provides MUX^{ing} for Ix LAP layer.
- ↳ multiplex. channel. above. Ix LAP Conn



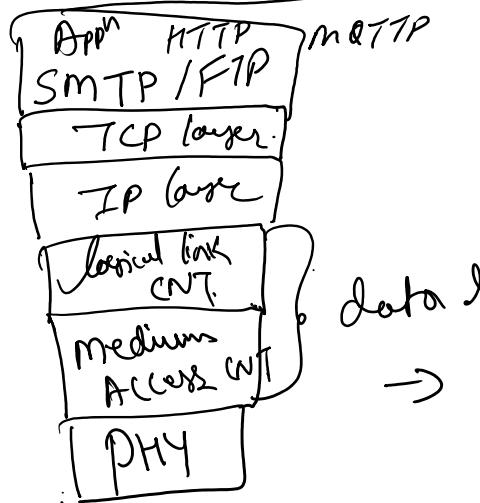
Ethernet → ethernet chipz, associated protocol stack.

↳ To connect Ed. to LAN.

↳ provides Physical layer & data link.

Layer functionality above. data. link layer the.

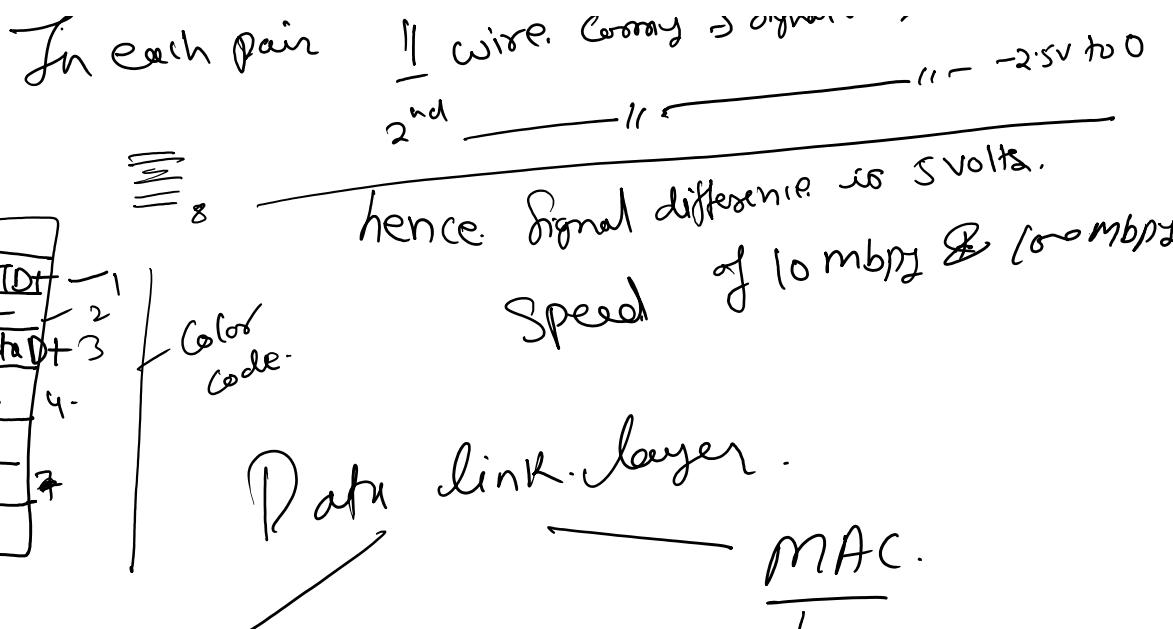
TCP/IP Protocol Stack & appⁿ layer protocol will run.



RJ-45 Jack

→ Eth. transmit. balance differential signals.

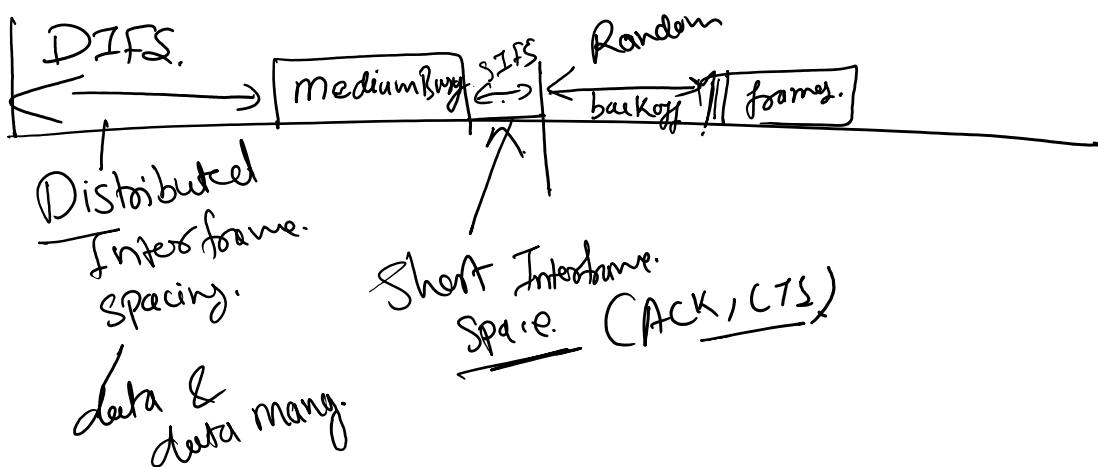
In each pair || wire. carrying → Signal Voltage. b/w 0 to 2.5v
 - 2.5v to 0



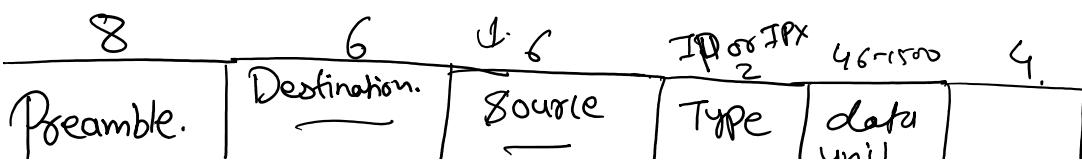
Protocols for conn' establishment.
 flow control, ack's.

Carrier Sense Multiple Access,
 Collision detection.

CSMA/CA



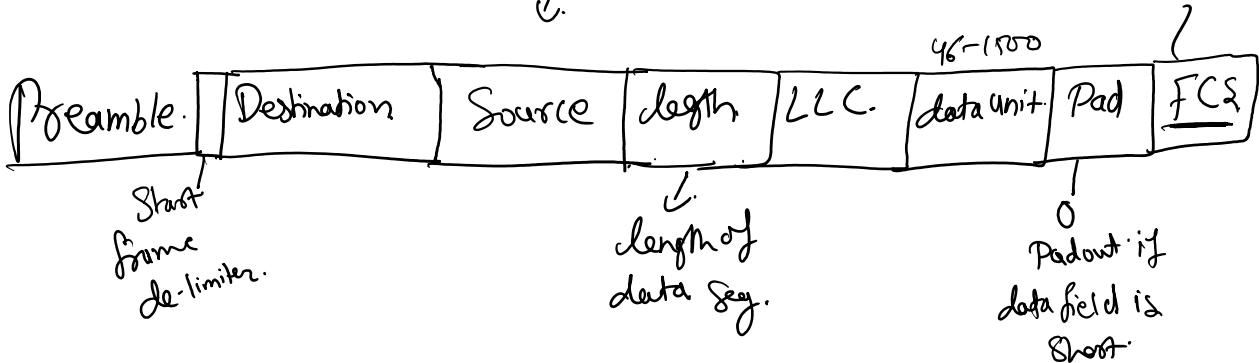
DIX Ethernet packet





IEEE 802.3 Frame

frame check
seg.



IEEE 802.11

↳ WLAN or wireless LAN n/w & PAN

↳ Cover PHY & MAC layers of WAN.

↳ LLC. is same as E-LAN.

↳ PHY medium for 802.11 WAN are:-

(a) Data rate support - 1 Mbps - 2Mbps.

(b) Direct Sequence Spread Spectrum operating in 2.4 GHz

Up to 7-channel each with a data rate of 1.12 Mbps can be used.

Extension of IEEE 802.11 is 802.11 b (^{Support 2.4 GHz})

at 2.4 GHz with range of 100 meters.

WPA3 ^{Dragonfly}

- - - - - ~~CRIS~~ hand. Dragonblood

Dragonfly
Dragonblood

IEEE 802.11a → Symbolic 6 GHz band. Dragonblood

802.11g → Supports Symbolic in 2.4 GHz band

Bluetooth (BT)

- ↳ Low Cost Tech.
- ↳ ISM (Industrial, Scientific & Medical) band.
Bridged radio transmission.
- ↳ Range:- 10 meters. to 100 meters
- ↳ SIG. Founded in 1998.
by Ericsson, Intel, IBM, Toshiba, & Nokia.
Released Version 1.0 in July, 1999.

Specification

- ① Frequency of operation:- 19m free space $2400 - 2483.5$ MHz.
Guard Band: 2 MHz.
79 channels in each 1 MHz B.W
- ② Modulation → GFSK.
..... Parity → in baud rate.

(*) 11/10 am

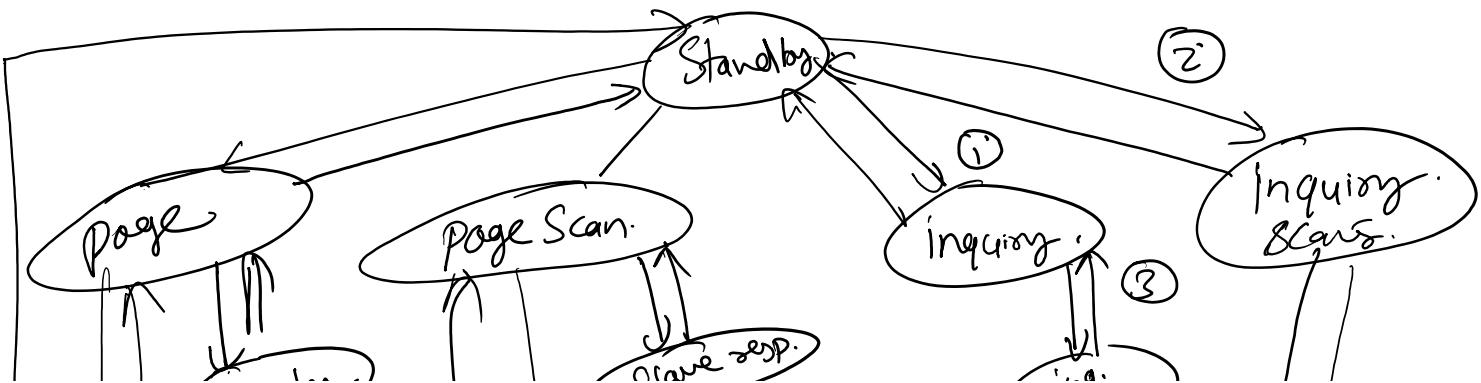
data rate :- 64 Kbps. - for voice ? in baudir.
57.6 Kbps - for data ?

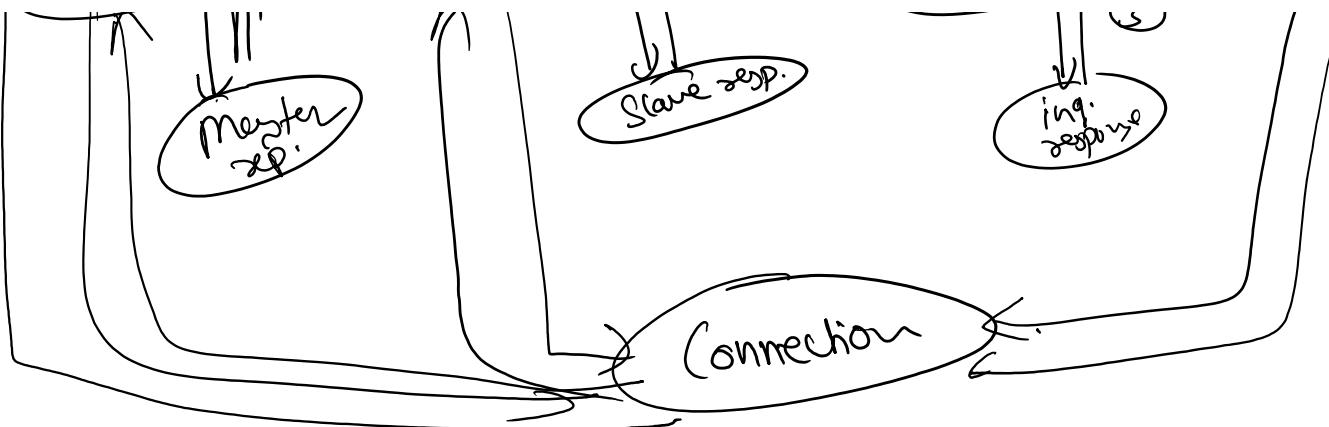
Service Support :- for both data & voice

Sync Connection Oriented (SCO) for voice.

Asyn Connection less (ACL) for data

	Classic BT.	BLE.
Data Payload	2 mbps.	~ 100 Kbps.
Robustness	Strong.	Strong.
Range	upto 100m.	upto 250 m.
Connection set-up speed	weak < 68	Strong < 0.003s?
Voice Capable	✓	✗

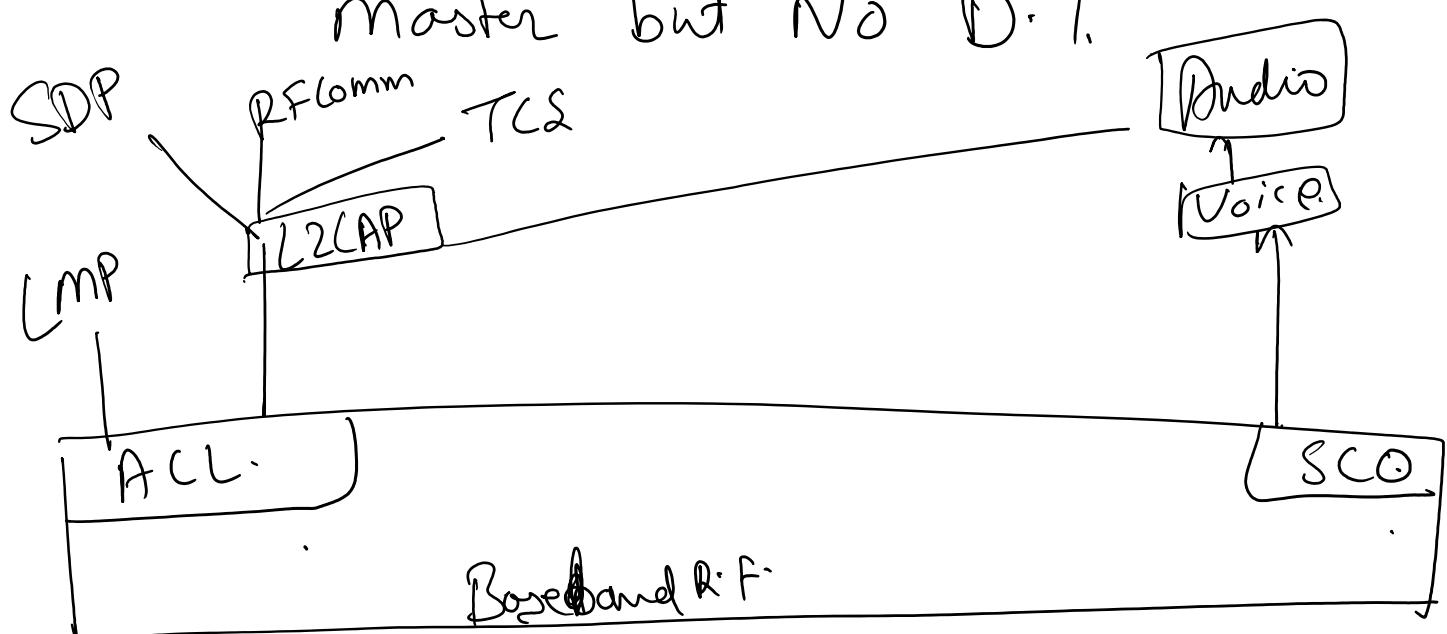




hold : dev will stop receivirg the data traffic.
for a specific (no ACK too)

Shift. → Slave will be given instruction like:
listen starting with Slot = S, T → period.
N, Slotz.

Park! → device only listen becon signal
from master occasionally & sync with
master but NO D.T.



LMP → Link Manag. Protocol.

↳ Set up ~~ctrl link~~ Control Link.

↳ Authentication → Challenge Response Scheme.

↳ Encryption → Confidentiality.

↳ Clock offset seq. → Sync.

↳ Timing Accuracy info seq.

↳ LMP Version.

↳ Type of Packet's Supported.

↳ Name seq.

↳ detach.

↳ Hold / Park & Sniff mode.

↳ QoS. → Parameter exchange.

→ no. of repetitions for Broadcast packets.

→ Delay, & B.W Allocation.

Logical link Control & Adaptation Protocol

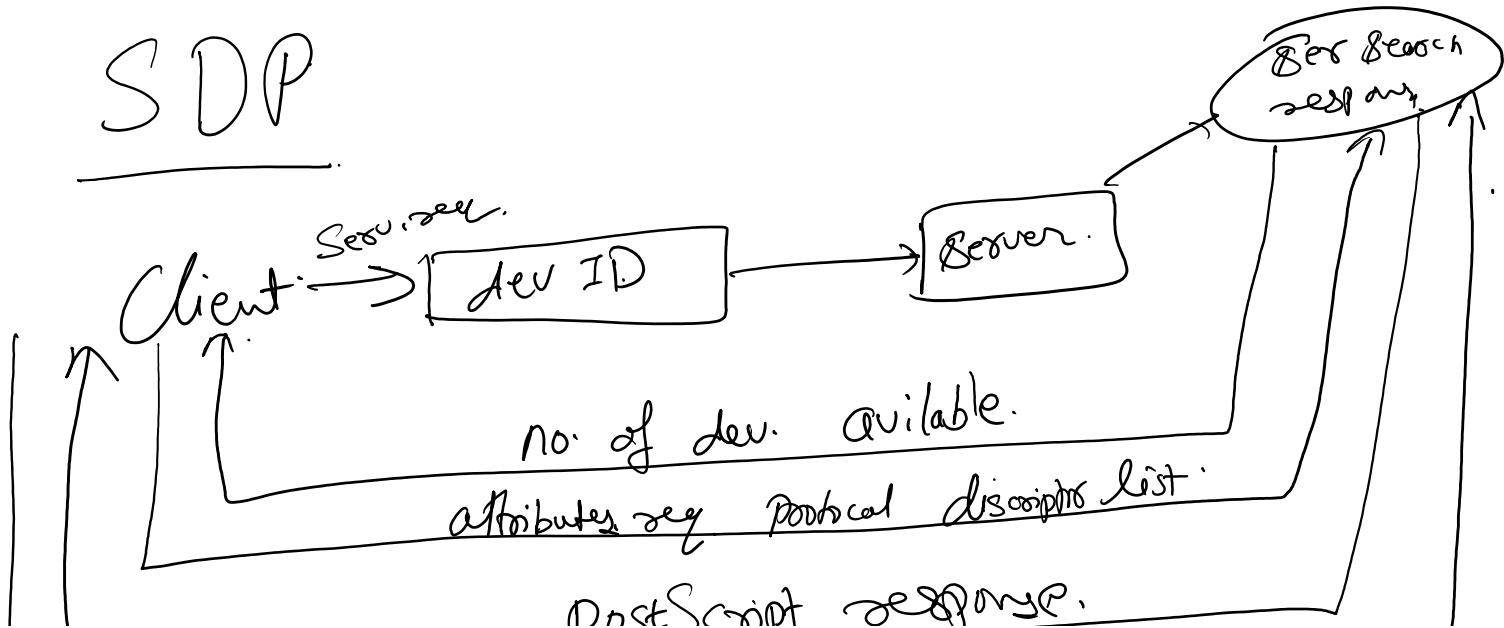
Logical Link Control

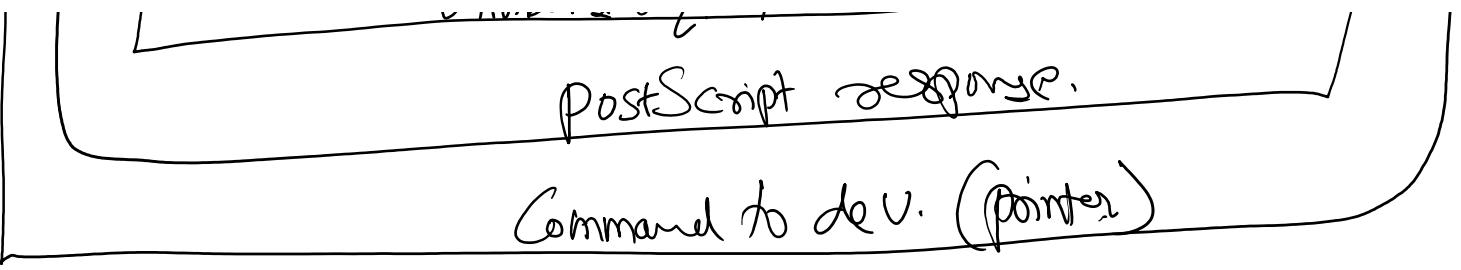
L2CAP

- ↳ runs above Base Band & Carrier.
- ↳ data Link Layer's responsibility.
- ↳ only for ACL links, packet size up to 64 Kbps.
- ↳ run on hosts. e.g. laptop, phone etc.
- ↳ does not support multicasting.
- ↳ Protocol MUX
- ↳ Segmentation & reassembly.

QoS

SDP





RFComm → is transport protocol - emulates RS232 over L2CAP.

Telephony Control Protocol Specⁿ (TCS)
 ↳ To establish voice commⁿ. (with ^{want} SCO)

Host Control Interface.

- ↳ Setting up & disconnection of links.
- ↳ Control of Baseband features such as time out.
- ↳ Retrieving. Status info.

4 64. 4.

