

# Computer Networks

It is a set of Nodes connected by communication links

Node → end devices → Any device that can send or receive data generated by other nodes/devices

eg: Computer, printers, security camera,  
Phone (mobile). Server

\* Communication link  $\rightarrow$  wired (or) wireless

\* Carries information  $\rightarrow$  link

End devices (Nodes)

Intermediary devices (Node)

PC

Printers

Servers

Tablet / Smart phone

Towers Cell phone

Routers  
wired (or) wireless

Towers

Modem

Internet cloud

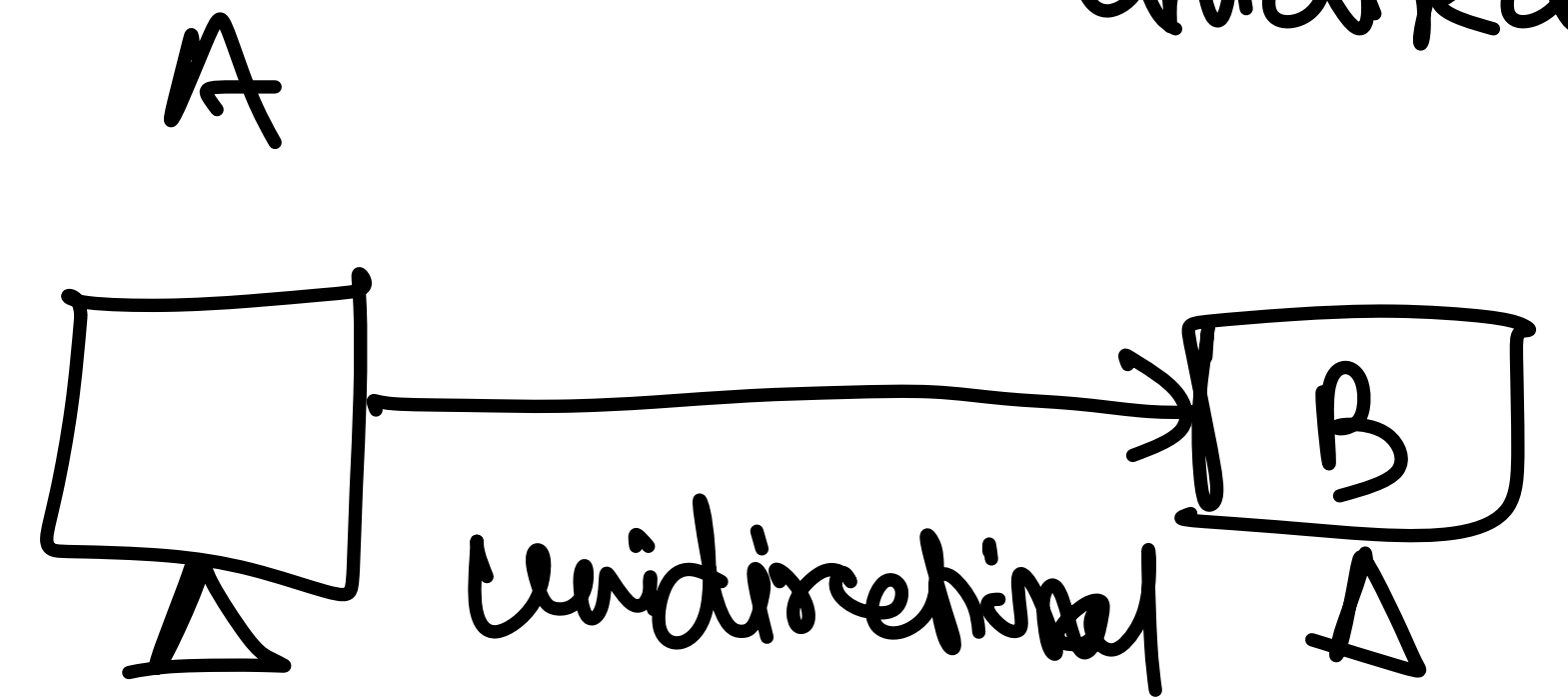
Switches  
hub

## Characteristics

- (1) Fault tolerance
- (2) Scalability.
- (3) QoS (Quality of Service)
- (4) Security.

## Data flow

- (i) Simplex → Communication unidirectional



A → Transmit

B → receive

Keyboard, Monitor

## Half duplex (Data flow)

↳ Bidirectional communication

↳ Transmit & receive but not simultaneously

eg: Walkie → Talkie

Full duplex: eg: Mobile phone, telephone line

↳ Bidirectional communication

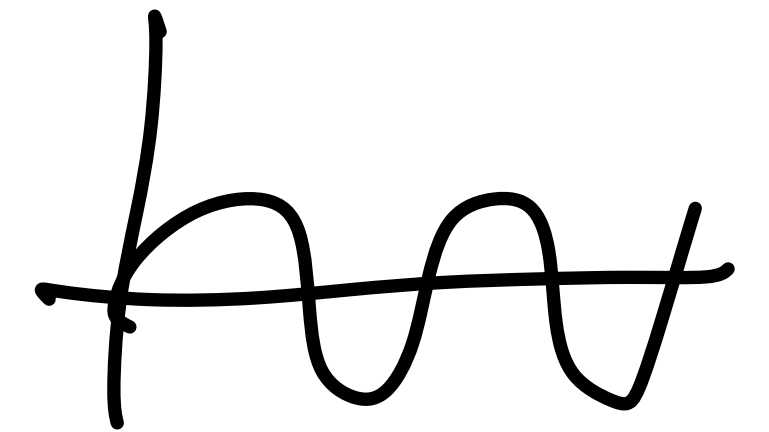
↳ Both transmit & receive happen simultaneously

# Protocol :

↳ Set of rules that governs data communication

↳ Tx & Rx (~~Sender~~ / receiver)

↳ channels or media



↳ what? how? when?

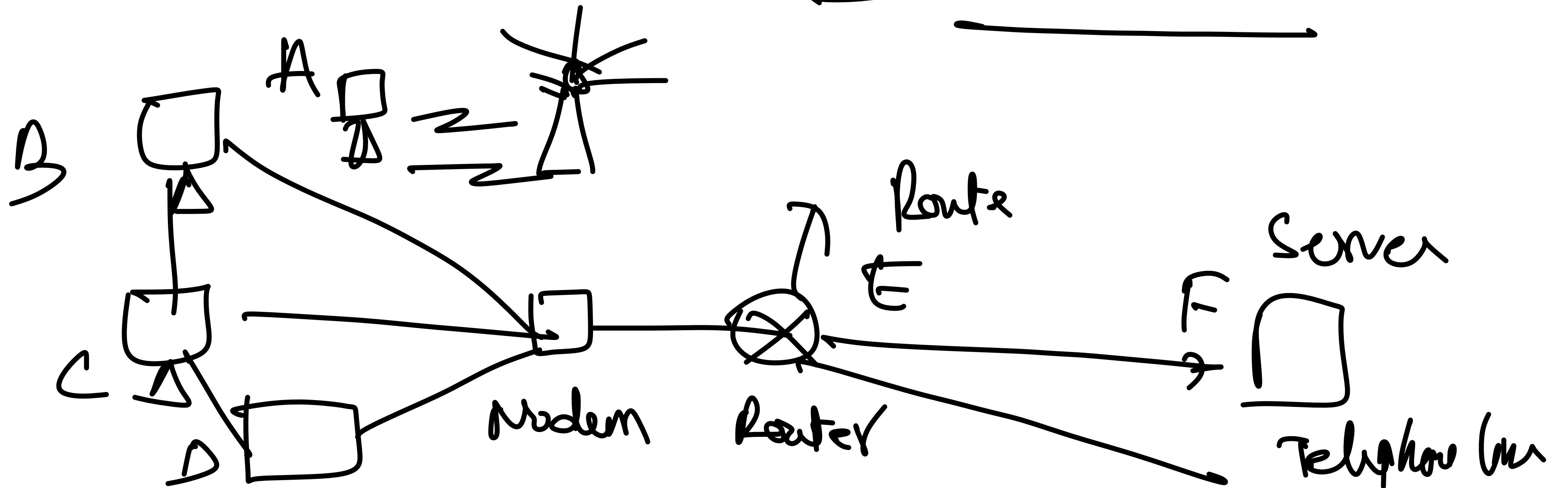
↳ Message size, Message time, Message delivery

↳ Format, encoding

Option

# Message delivery options

- \* unicast → one sender & only receiver IS/IR
- \* Multicast → one to many (to devices)
- \* Broadcast → one to ALL in network



## Peer to peer (connection)

\* All peers are equal

\* Simple Sharing

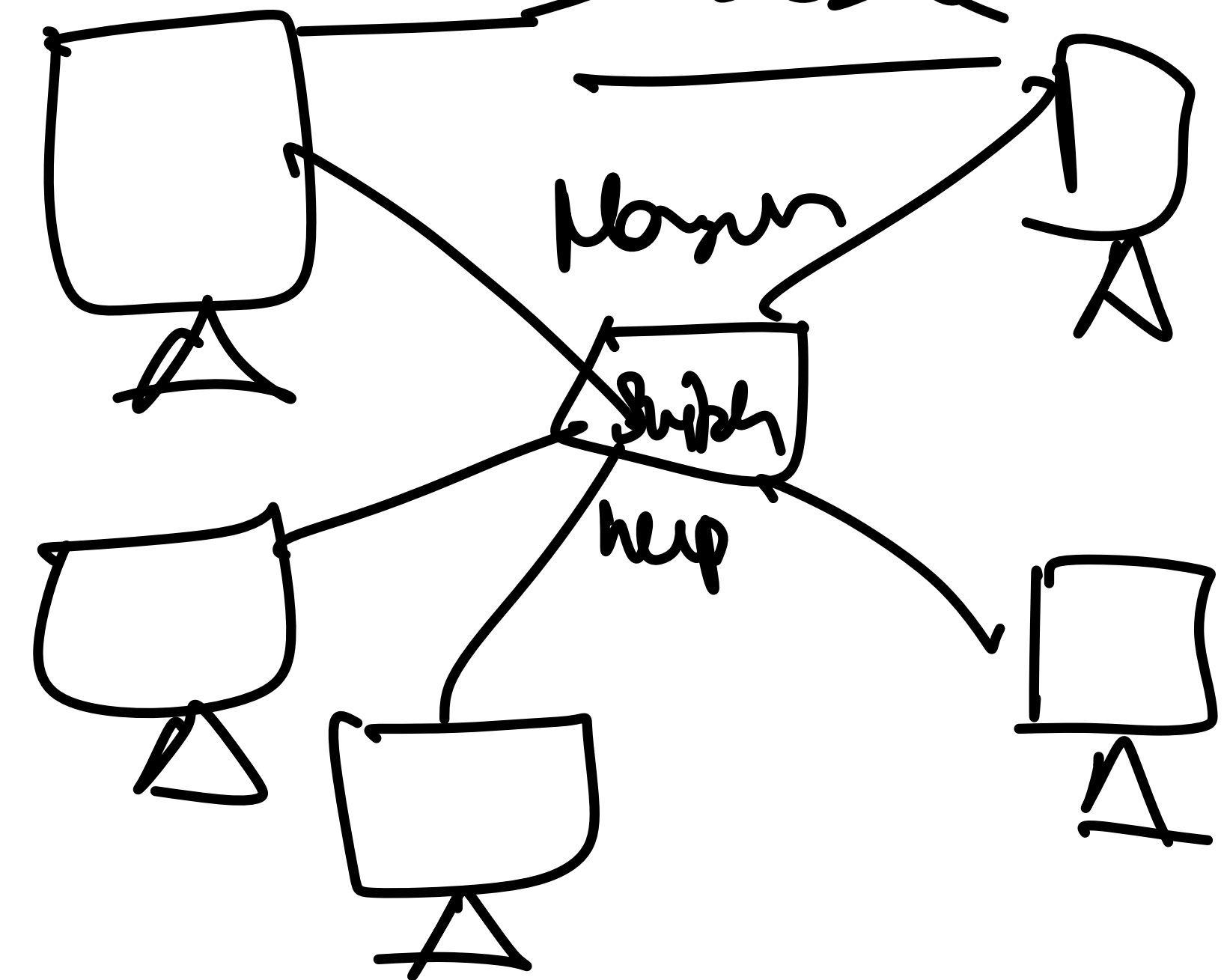
\* NOT Scalable

No Supervision

## Client to server

N/w

Network Scalable

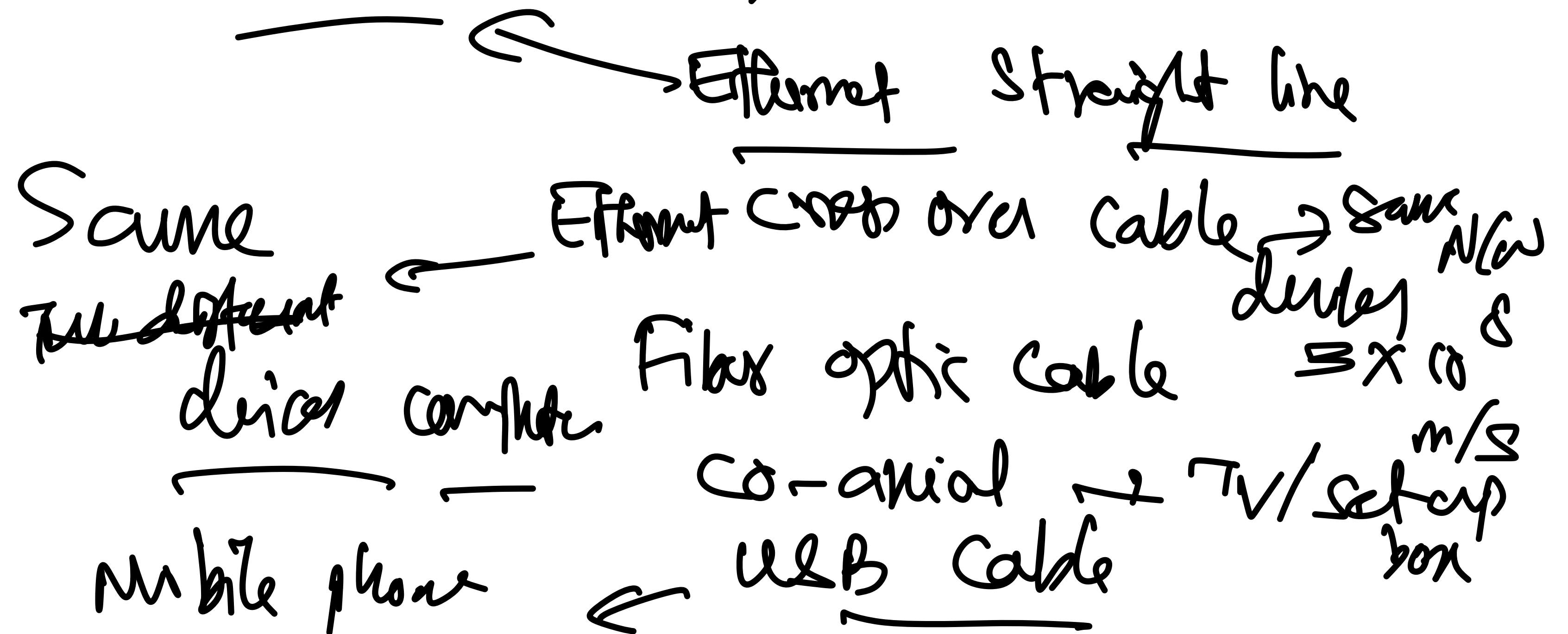


Request → Response

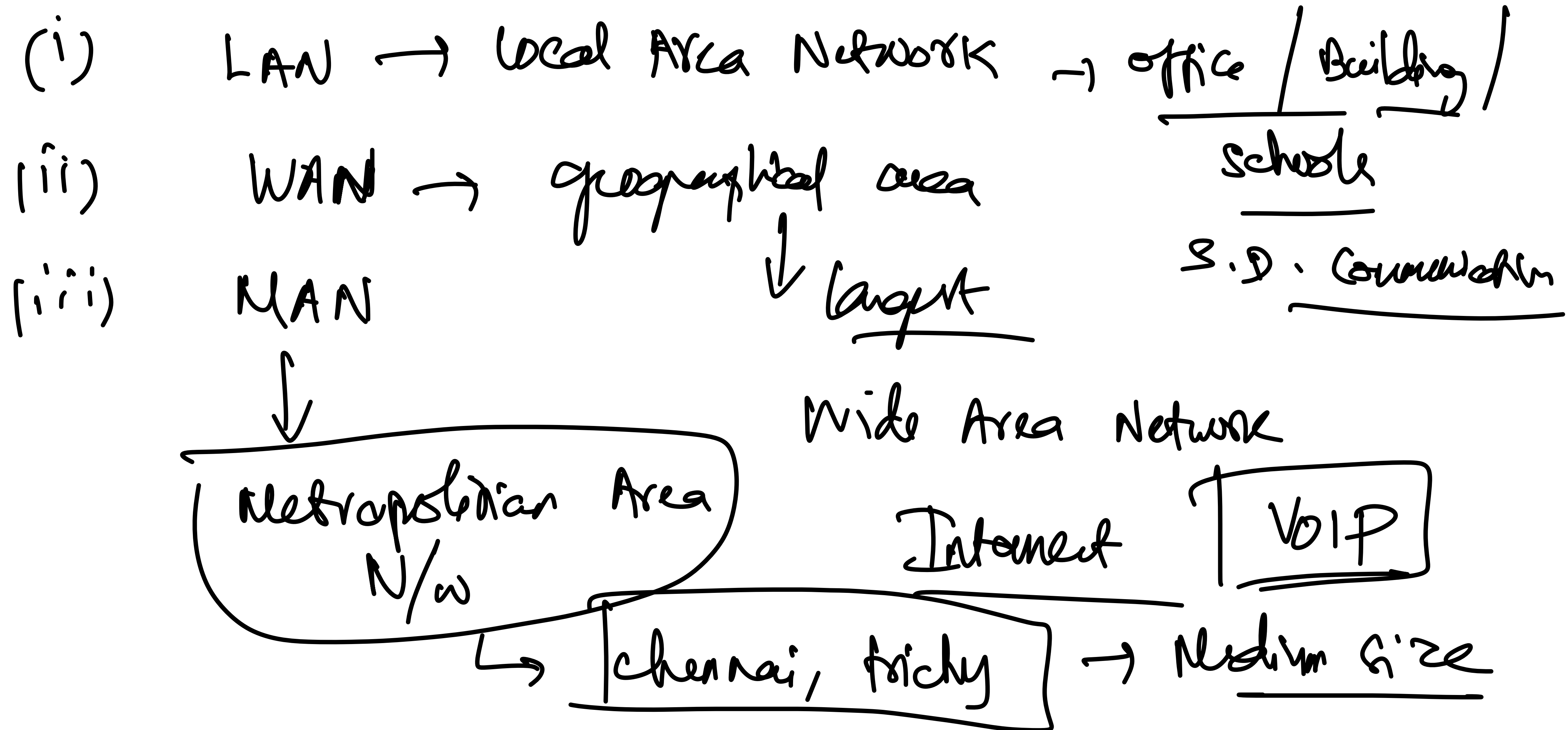
# Components of N/w

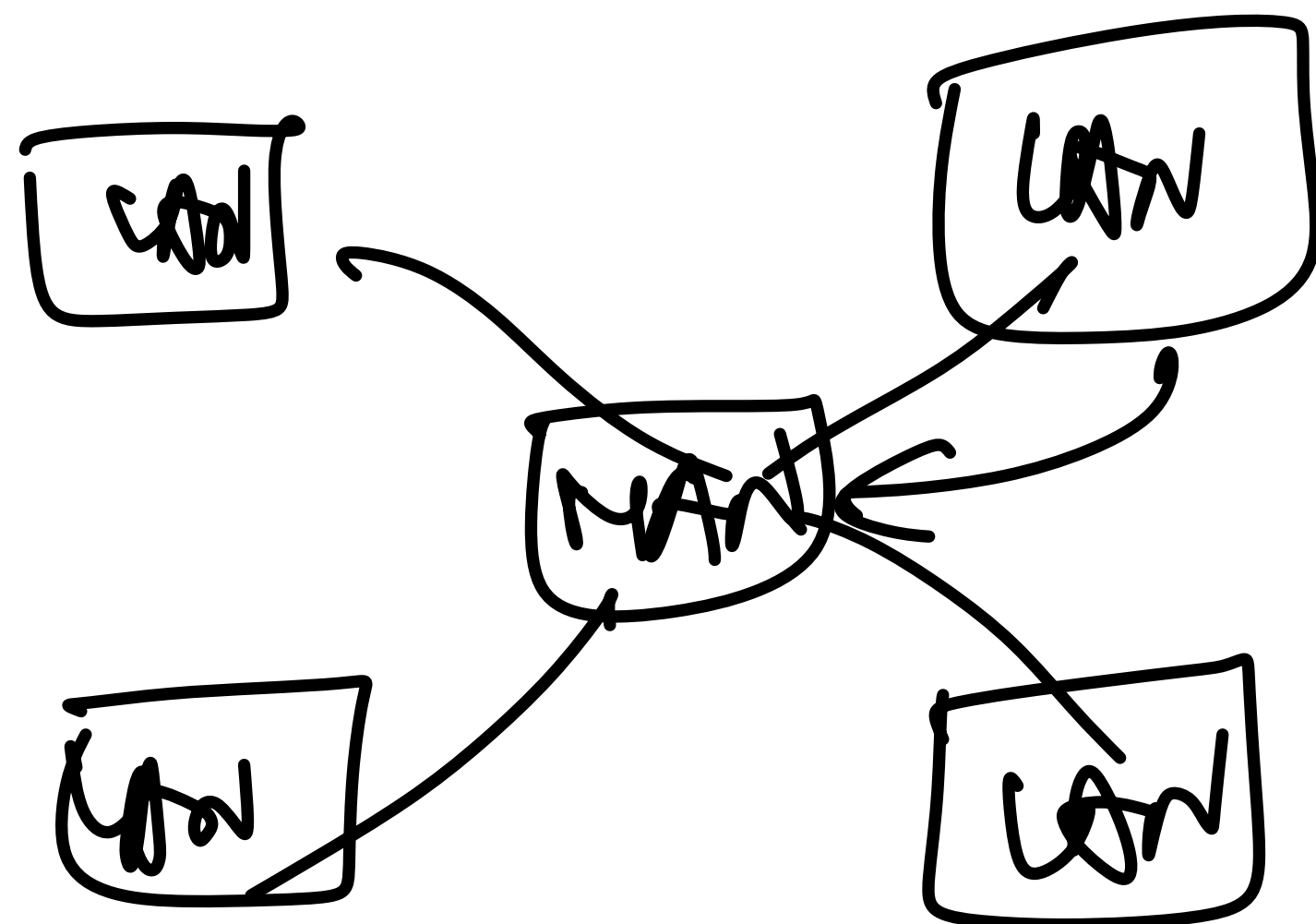
- (1) Nodes → end devices / Intermediate devices
- (2) Media → channel / link (wired / wireless)

(iii) services - two dominant models ↓



# Classification (size) of N/w





MANY LAN's



SAN → Storage  
Area Network  
↳ cloud

# Topology :

↳ Layout ✓ /

/ Node  $\rightarrow$  Assignment

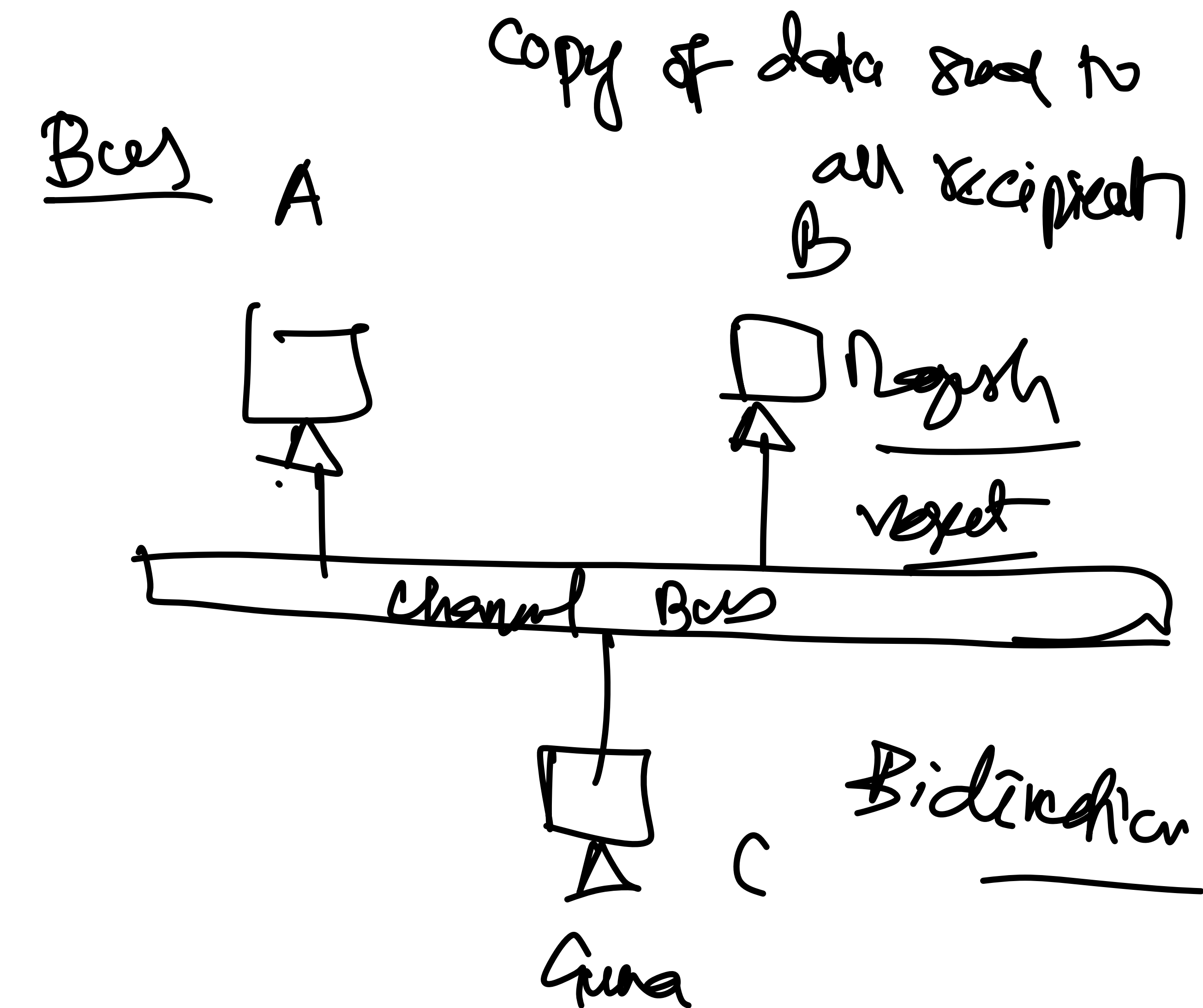
## Arrangement of Nodes

Physical  $\rightarrow$  Placement of Nodes

Logical  $\rightarrow$  Data flow

# Topology

- (1) Bus
- (2) Ring
- (3) Star
- (4) Mesh
- (5) Hybrid



Dis adv

(1) NO security

bus expensive

