Simplex → Half → Full

Q What is HUB ? full explanation.

Ans:- ① HUB is a network device that is used to connected multiple computers in a network

② All the information send to the HUB is automatic send to each port to every device

③ A HUB is less expensive, less intelligence & less complicated.

④ HUB generally used to connect Computers in a LAN

⑤ Transmission mode of HUB is half duplex

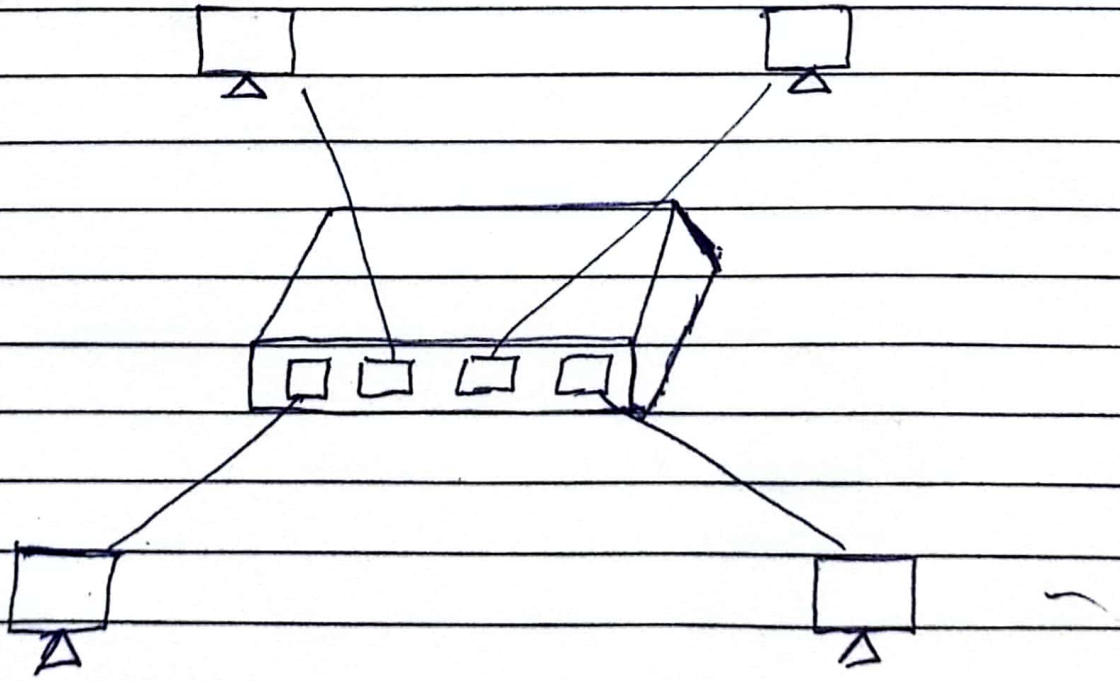


fig:- HUB N/W Device

Advantage :—

① The Hub can broadcast the message
② It is less expensive that anyone can use it.
③ Easy installation
④ Robust / Strong.

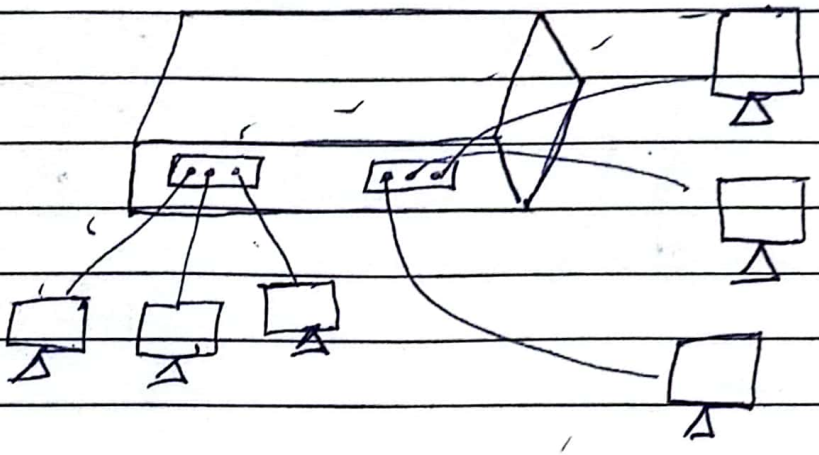
Disadvantage :— If the HUB is failed the entire N/W will be failed

① We can't send Private/Personal data through hub
② HUB doesn't provide any security
③ HUB can't support full duplex transmission

Switch!— Switch is a network device that connects multiple computers together in Network.

It is mainly used to send the private message as well as their is no wasting of data.

Switch can easily identify that which device connected with which port by using MAC address, thats why it delivered message on particular destination machine.



Note!— Switch is wire intellegent than HUB.

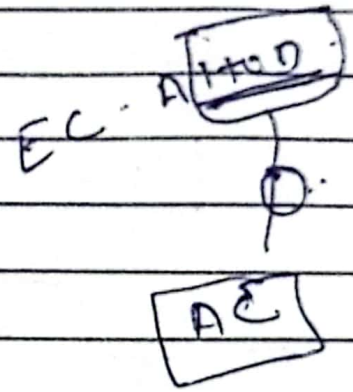
Advantages!— ① It generally used to Unicast the message
② It provides more security than HUB
Switch support Full duplex data transmission mode
It is used to send the data packet based on MAC address

Disadvantage :-

① If switch is failed then entire network will be failed

② It is more expensive

③ Difficult to setup



L.A.N

Router :— Router is a network device which work as a traffic controller. A main work of router is to choose a congestion free path through which the data packet will travel.

Router receive data packet to the sender, analyse and foreward those data packets then giving to receiver.

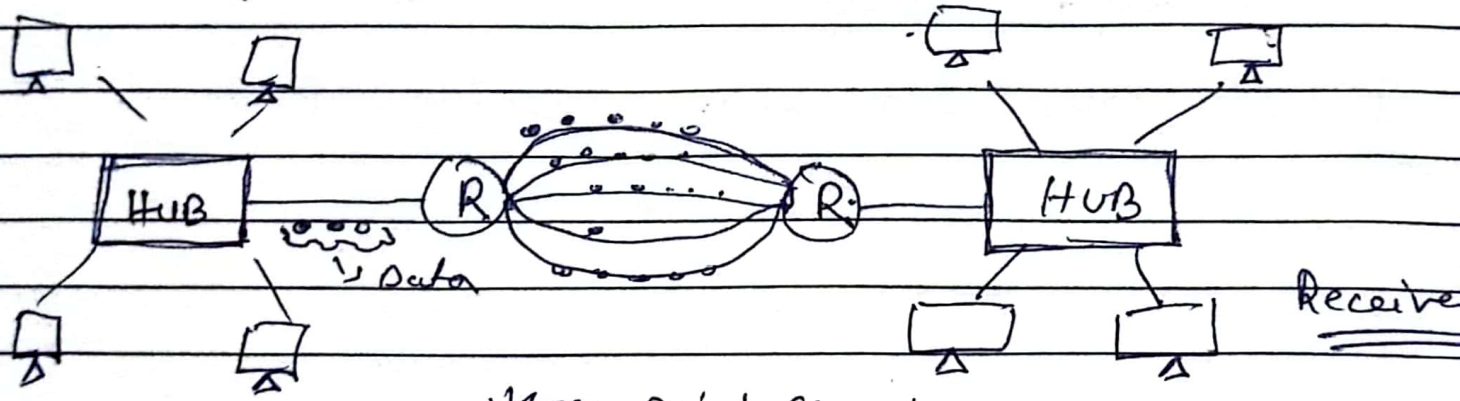


fig Router N/W Device

Note :— Router uses both LAN & WAN Networks

Advantage :—

① It provides connection b/w two dis-similar type of Network.

② Transmission rate is very high.

③ It internally uses some algorithm to find out Congestion free Path.

④ It Provides both wire or wireless facility

Dis-advantages:-

① Router is more expensive Compare to other N/w device.

② Routers are Complex to maintain

③ Security issues.

④ It only work with routable protocol.

*

Bridge :-

Bridge is a network device that is used to seperate LAN into one of section

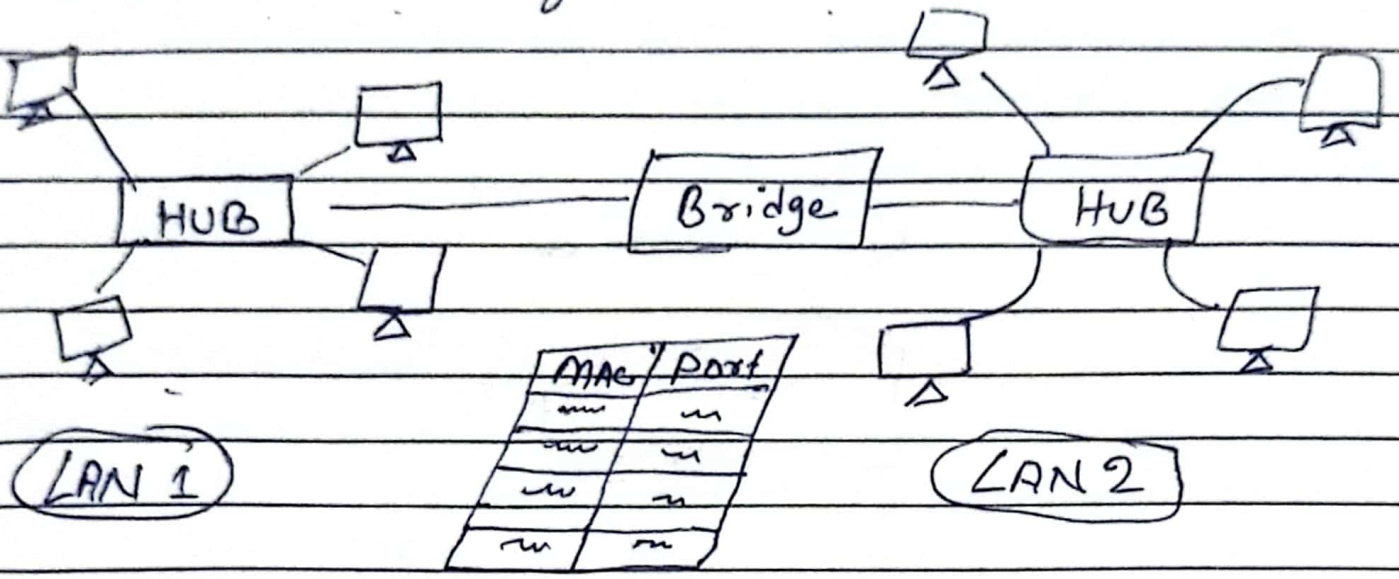


fig :- Bridge

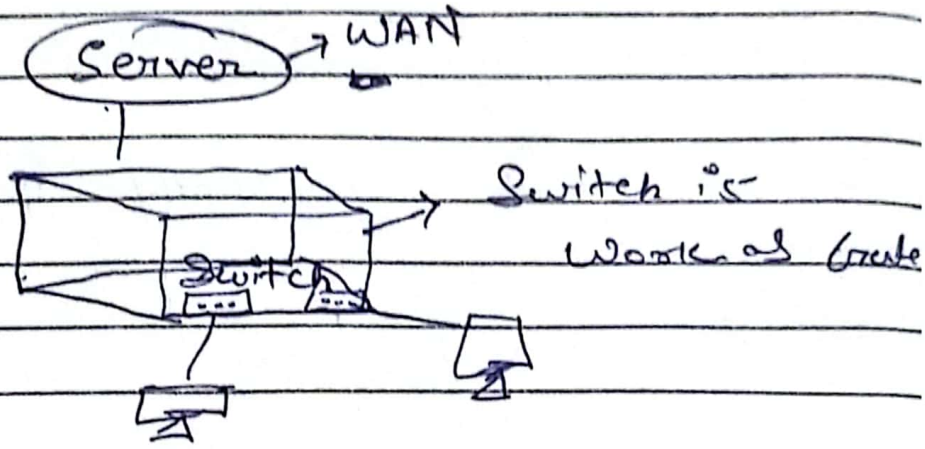
Note :- It operates both physical as well as data link layer of OSI model

Advantages	Disadvantages :-
using bridge device we can extends network	① It doesn't stablish different network.
It broadcast the data to each node like HUB & Repeater	② once it broadcast the messeges then it is incapable to stop the messeges
Collision can be reduced easily	③ It is more expensive
It is more intelligent	④ Transmission rate of data is slow than repeater.

Gateway :-

Gateways is a hardware device that is used Connected two dissimilar type of N/W

It allow us to send & receive data throug the internet even it is LAN N/W



Note :- It operates all 7 Layers of OSI model.

Advantages	Disadvantages
① It connects two network which has different protocol	→ It is more expensive
② It operates all 7 layer of OSI model.	→ Data transmission rate is Slow
③ We Can't access the internet without a gateways	→ Difficult to maintain as well as very Comp
It provide some security	

TCP/IP model :-

→ It was designed and developed by the department of Defense (DoD) in the 1960s.

→ AND It is based on Standard protocols.

→ It Stand for Transmission Control Protocol / Internet Protocol.

→ TCP/IP model is partical version of OSI model.

→ But it Contain only four Layers, unlike Seven layer of OSI model.

Because of no Standar dedmention Some time it's four layer or five layer.

* What it do :-

The main work of TCP/IP is to transfer the data of a Computer from one device to anot

How to work :-

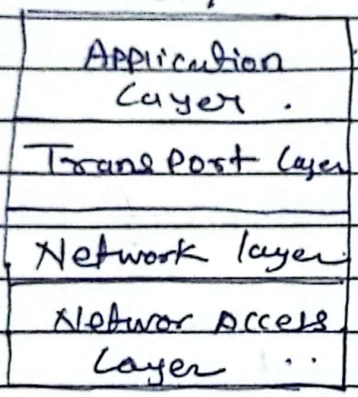
Whenever we want to send Something over the internet using TCP/IP model,

The TCP model divide the data into Packet at the Sender Side and Same Packet ha to recombined at the receiver Side

95222 16198

This things maintain the accuracy of the data

Diagram :-



elect → li

Unit:- 4

Q Explain ~~TCP/IP reference with diagram~~ ATM and SONET

SONET :—

SONET Stands for Synchronous optical Network. SONET is communication Protocol, developed by Bellcore - that is used to transmit a large amount of data over relatively large distance using optical fibre.

With SONET, multiple digital data Stream are transferred at the same time over the optical fibre.

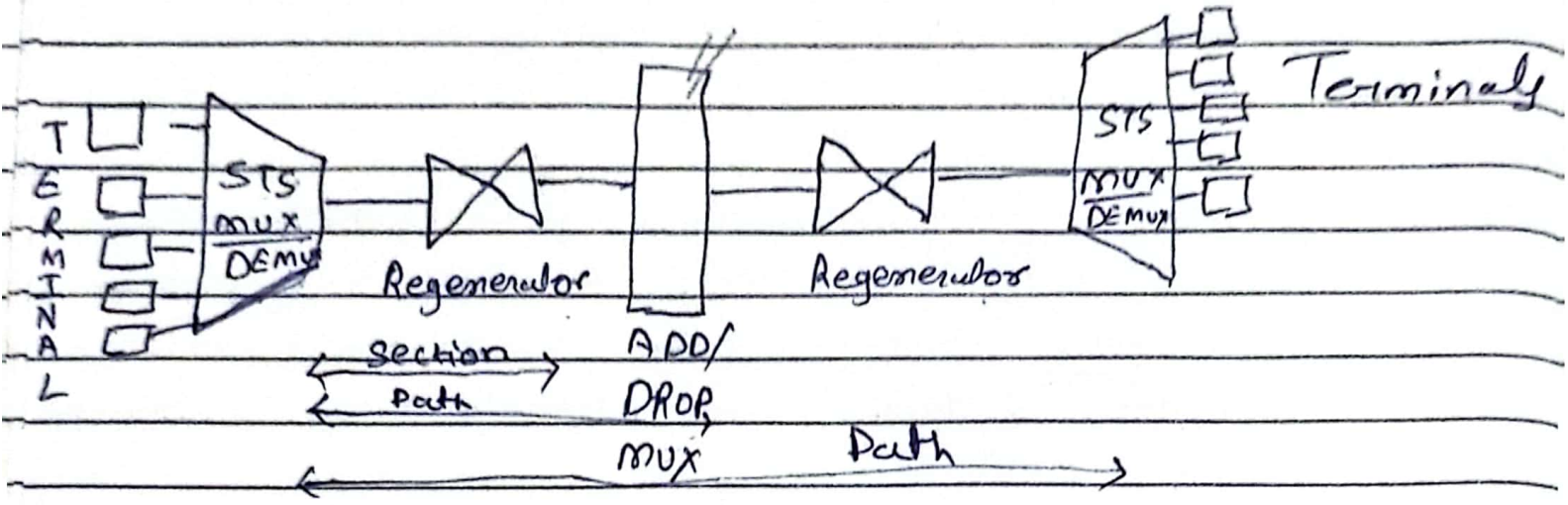
Key Points :—

- Developed by Bellcore
- used in North America
- Standardized by ANSI (American National Institute
- Similar to SDH (Synchronous Digital Hierarchy) which is used in Europe and Japan

Note :— A Single clock (Primary Reference clock) handle the timing of transmission of Signal, so, these called Synchronous

Uses of it :— It is used for converting an electrical signal into optical signal so, that it can travel longer distances

Sonet Network elements



1 STS multiplexer :—
- Performs multiplexing of signal
- Convert electrical → optical signals

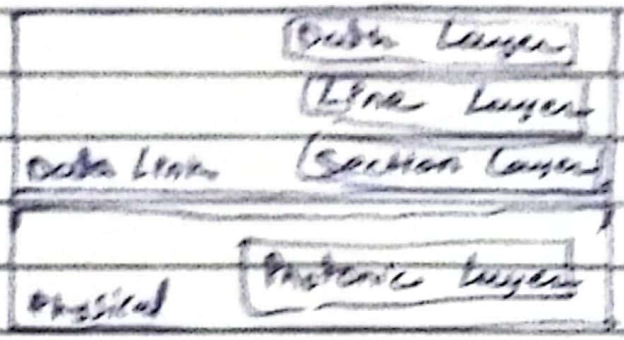
2. STS Demultiplexer :—
- Performs demultiplexing of signals
- Convert optical signal to electrical signal

3. Regenerators :—
It is a repeater, that takes an optical signal and regenerates (increases the strength) it

4. Add / Drop multiplexer
→ It allows to add signals coming from different sources into a given path or remove a signals

SONET Layers:-

It includes four function layers:-



Path Layer :- STS mux/demux provides path layer function

Line Layer :- STS mux/demux and APS/PPS provides line layer function

Section Layer :- Responsible for movement of signal across physical section

Photonic Layer :-

It is corresponding to physical of OSI model

Advantages:-

→ Transmitted data to large distance
→ Less electromagnetic interference
→ High data rates
→ Large Bandwidth