Networking / sharing is saving →

CCNA, CCNP — cisco certificate

Network N+ — comptia " "

- 2 or more comp. are linked to share same resources.

- cables, radio waves, satellites, IR light

Types of Networks

LAN - (10 mbps to 10 gbps) (Peer to Peer) (building)

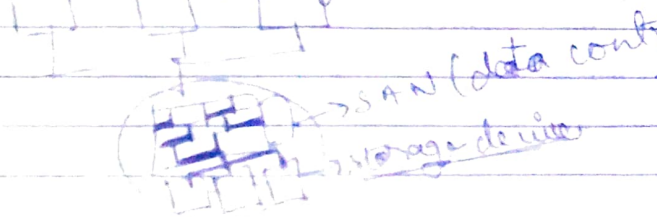
PAN - (3-4 devices) (")

MAN - (city)

WAN - (internet)

CAN - (Ykart (range to town))

SAN - (storage area network) / (SCSI) / (youtube)



Peer to Peer (no control on any pcs)

Client-server model (ADMIN) (bcoz porn involved)

APS (NDP

OSI model

OSI layers (TCP/IP Suit)	Activities
Application (APP to APP) Telnet, FTP, SMTP, HTTP, DNS, SNMP (remote / files) (email) (Domain to IP) (IP)	To allow access to network resources
Presentation (APP to APP) (Packets)	To translate, encrypt & compress data
Session (App to App)	To establish, manage & terminate session
Transport (process to process) SCTP, TCP, UDP, sockets & Port add (Public ↔ Private)	To provide (process to process) address manage delivery & error recovery
Network (Destination ↔ Source) Router IP, ARP/RARP, ICMP, IGMP, Logical add (1500 bits → 1 frame)	Move packets from source to destination internetworking
Data link (Hub/switch) (security) IEEE 802, TR, FDDI, PPP, Physical add.	bits into frames hop to hop
Physical (Hub & Repeater (speed)) Medium, (Lan, fiber, Coax, Wireless signal) (Lip)	To transmit bits over medium / mechanical and electrical

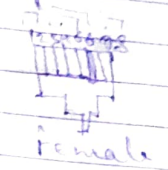
Uses of layer given in ppt

Physical layer

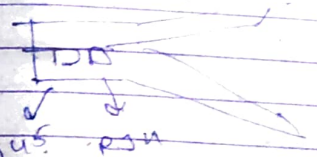
- transmission media
  - Guided (wired)
    - twisted pair
    - coaxial cable
    - fibre optics cable
  - Unguided (wireless)
    - free space

For UTP - (2 protection)

RJ (45)



Registered Jack is keyed connector (only one way insertion)



possibilities

(electromagnetic interference)

For STP (2 protection)

possibilities

high attenuation

Coaxial cable (4 protection)

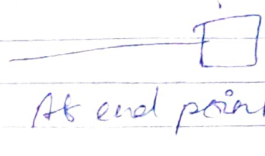
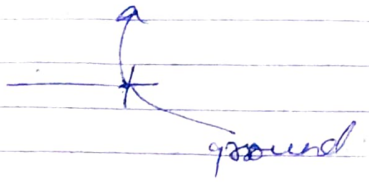
CCTV

RG - 59 (PSTN)

RG - 58 (LAN)

RG - 11 (Radio gain)

Coaxial connectors (TV/VC-10000)

BNC-T	BNC connector (10base 2) (10m – 100m)	BNC terminator (CTC)
		
	At end point	ground

possibility – 1 failure shutdown network.

fibre optic cable (4K) (100 gbps)

light form

→ Outer jacket (plastic)
→ glass
→ Cladding
→ Kevlar strength
→ plastic buffer

(EIA/TIA) 568A connectors. (optic fiber cable)

SC	ST	LC
(single mode)	(multimode)	(Both)

b – only unidirectional propagation.

PN/campus/m LAN/Data center

unguided / wireless transmission

Radio Wave	Microwaves	Infrared
3 KHz to 2 GHz	(2 – 5 cm) 1 GHz to 300 GHz	300 GHz to 400 THz
(Radio/TV/walkie talkie)	Terrestrial / satellite	Short range
Antennas	wireless lan, GPS	Night vision camera, remote control, bluetooth
Convert high frequency to electromagnetic waves.		

PING (Packet Internet Gropher)

to verify connection possibility

using ICMP (internet control message protocol)

(Internal PCI-E) (External usb)

IEEE 802.11 family → Wireless fidelity (wifi) (100 m)

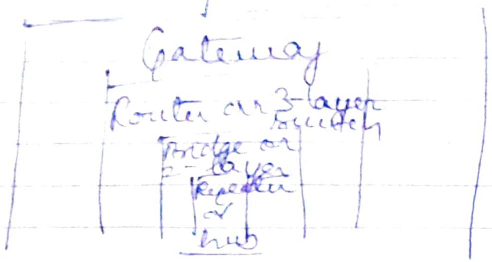
↓ 802.11.15

Bluetooth (10 m (2dB → 5.0, 2Mbps + 20

→ 802.11a → 802.11ax

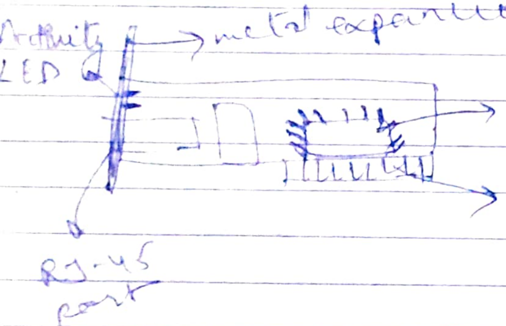
(Internal PCI-E) (External USB) 2019 10–12 gbps

Networking devices



1. NIC (Network card). (mac address)

to connect ethernet cable



2. Repeater (regenerate or replicate)

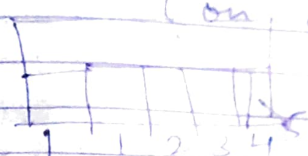
(Set - top - box)

1 layer | HPS TNDP

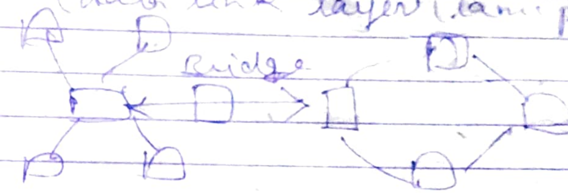
3). HUB (blind)

(Receive data on 1 port & transfer on other ports.

(8, 12, 24)



4). Bridge (data link layer) (lan protocol)



connecting different topology & transfer or forward or discard.

working of bridge

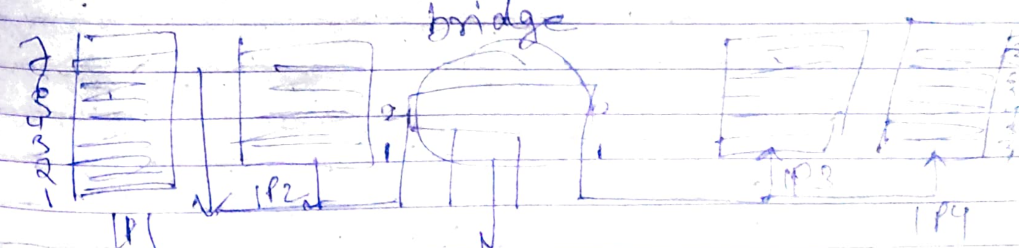
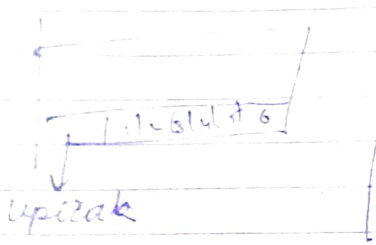


	table	
* IPS don't exist at bridge only	Address IP1 / IP2 / IP3 / IP4	1 / 1 / 2 / 2

Hub upgraded as Switch (MAC addresses)



can connect to routers, servers or other switches.

Gateway (security)

public ↔ private.

(Id created)

Router (different networks)

IP Addressing

IPV4 (32 bytes) octet

by IANA

of host or router

0.0.0.0 to 255.255.255.255

No. of Host = 255^n H

128	2^7	class A - 0 to 127
64	2^6	class B - 128 to 191
32	2^5	class C - 192 to 223
16	2^4	class D - 224 to 239 (IOT) (multicast)
16	2^4	class E - 240 to 255 (R&D)

class is defined by 1st octet (1st class)

(127.)

localhost (Look back IP)/(Home).

	byte1	byte2	byte3	byte4	
class A	NET ID	HOST ID			→ NHHH
class B	NET ID		HOST ID		→ NNHH
class C	NET ID			HOST ID	
class D	MULTICAST ADDRESS				
class E	RESERVED				

IPV6 (128 bytes)

uniquely universally to host or route to net. of India.

IP : 2001 : db8 : 1234 : 1350 : 2256 : f3dd/64.

4e2 billion IP.

Unicast Telcast & Multicast.

(No classes)

Subnet Mask | (defines no of host)

255.255.255.0 → | 255

255.255.0.0 → | 255 × 255.

DHCP (Dynamic host configuration protocol)/APIPA

server that provide automatic IP to devices

www → Tim berners

DNS (phonebook)

MAC (unique for every device)

D4-BE-D9-8D-46-4A

(IEEE 802 networking)

TCP/IP → OSI model

(Conceptual) (Referral)

4 layers

A → Application
T → Transport
N → Network
D P → Network Interface

pb (possibilities) | $ to bi in 2021 (Bg)

Macro virus (made by antivirus (simple) MS office docs written in VB for Apps.

Executable virus .exe table Anti program

Backdoor virus — send & receive — view screen — monitor all keys.

Your comp. → (On a way to website) → (DNS) → cloud

Malware (ex. Ransomware) phishing (login pages)

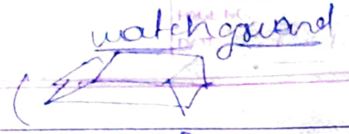
Man in the middle (traffic)

cross-site scripting (into web)

SQL injection attack (database)

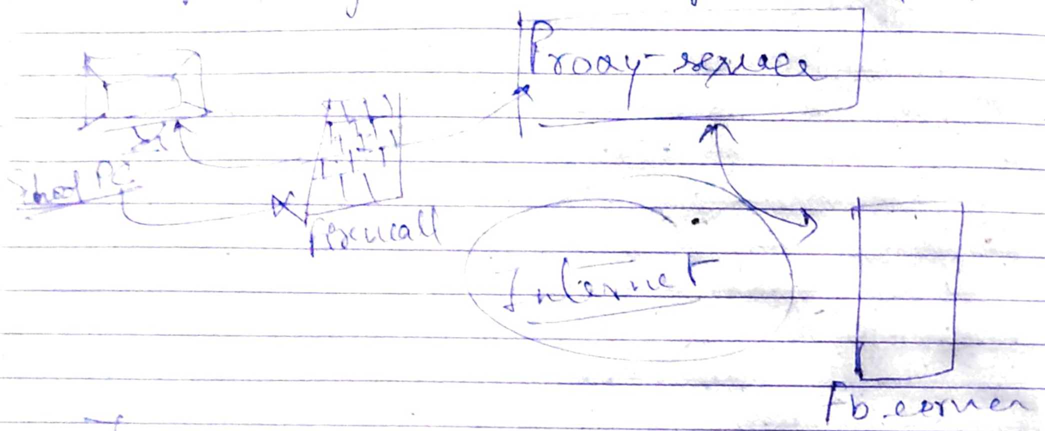
DDOS (10 Gbps request) (cache)

Anti-virus



(windows)
Firewall (logical ya physical)

accepts, rejects or drops that specific traffic



Troubleshooting

#1 Pinging problem

1. check discovery
2. check firewall
3. " IP address
4. " Host & medium

#2 No printing

1. Go to services.msc
2. Check print spooler service
3. Restart it
4. Give [illegible] printing command.

#3 No Internet Access

→ Check adapter & ports & wires & router & rebooting restart network devices & system & check default line in table.

#4 IP conflict

→ Ping from another after shutdown, if pinging change IP,

Practical — Pending (Vmware).
1. Folder sharing in network
2. Remote desktop connection

Bonus

1. Comp full form
2. Run commands
3. CMD commands for nt.

Ncpa.cpl – Net Adapter
Firewall.cpl – firewall setting
Services.cpl – windows services
Devmgmt.msc – device manager
Mstsc – Remote desk connection
Msra – Windows remote assistance
gpedit.msc – windows policies setting