minimum cost এ এ router id তে যাওয়া যায়

next hop

router no.

PC1

↓ ↓ next
known hop
distance of the neighbour

router

Every router maintains a routing table

অন্য node (router) এর কাছে কত cost এ পৌছানো যায়।

→ Per router knows, how many routers are there in the network.

Next কোন hop এ যেতে হবে তার info. ও রাখতে হবে।

Routing table has to be dynamically generated as a new router can be added inside the network.

→ Per router knows → who are the neighbours
and কত cost এ সেই neighbour
এ যাওয়া যায়

Per router certain time পরপর তার table neighbour কে পাঠাবে so ↓

৩, ২ কে বলে (3→1) যাওয়া যায় 3 cost
২ জানে (2→3) cost হল ২ and ∴ (2→1)=10 so
(2→1) cost update করে 10 হতে (২+3)=5 পাবে

Unix Virtual Interface

4 Virtual Interface → each having an ip and port.

topo.txt having per end's ip and edge weight
⇓
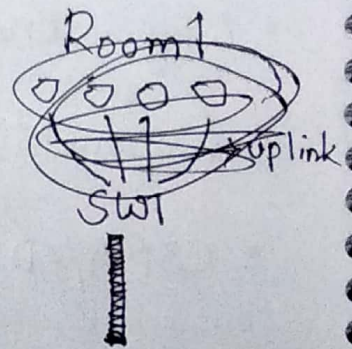who are the neighbours and what is the cost to reach
it's number

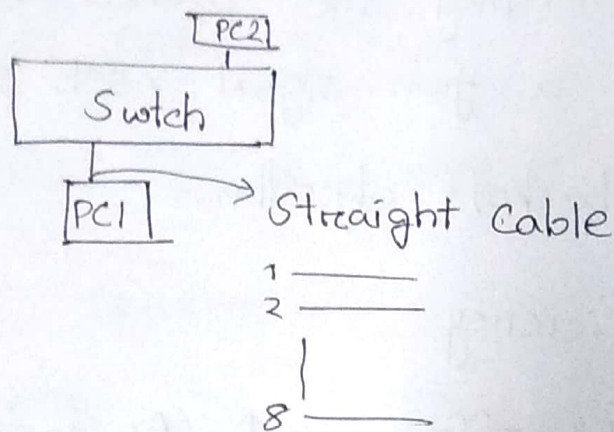→ ifconfig

Switch (24 port each)

PC2

Switch

PC1 → Straight Cable

1 ——
2 ——
|
8 ——

Room1

Uplink

Sw1

- Cross cable (Used between two same devices)
  transmitter — receiver

Same device (Switch)

↑
↓ → Cross cable

Same device (Switch)

PC1
|
ST
|
ETS2
|
PC2
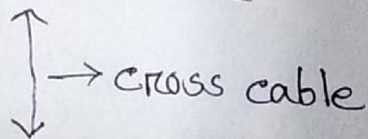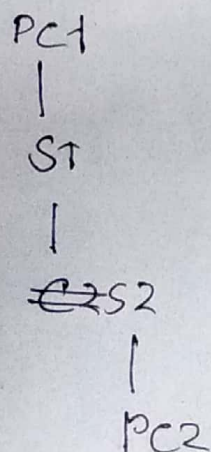
up link → means অন্য জায়গায়
→ larger line needed

Access layer (Room)
↑
Distribution layer (Floor)
↑
Core layer (Building)
↑
Main line

Practical:

Router ← Console →(PC এর serial port)
এর through
↓
Putty software
(Give ip of router here)

Virtual:
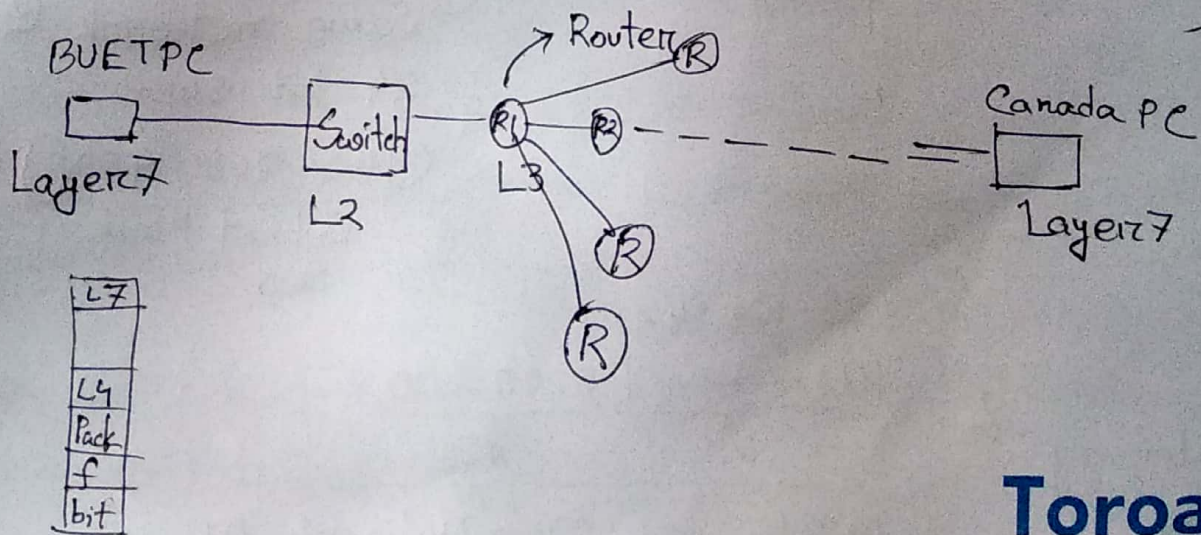
Command Line Interface (Command Prompt of packet tracer)

IOS = Inter Networking Operating System

*
> = view mode
→ privilege mode

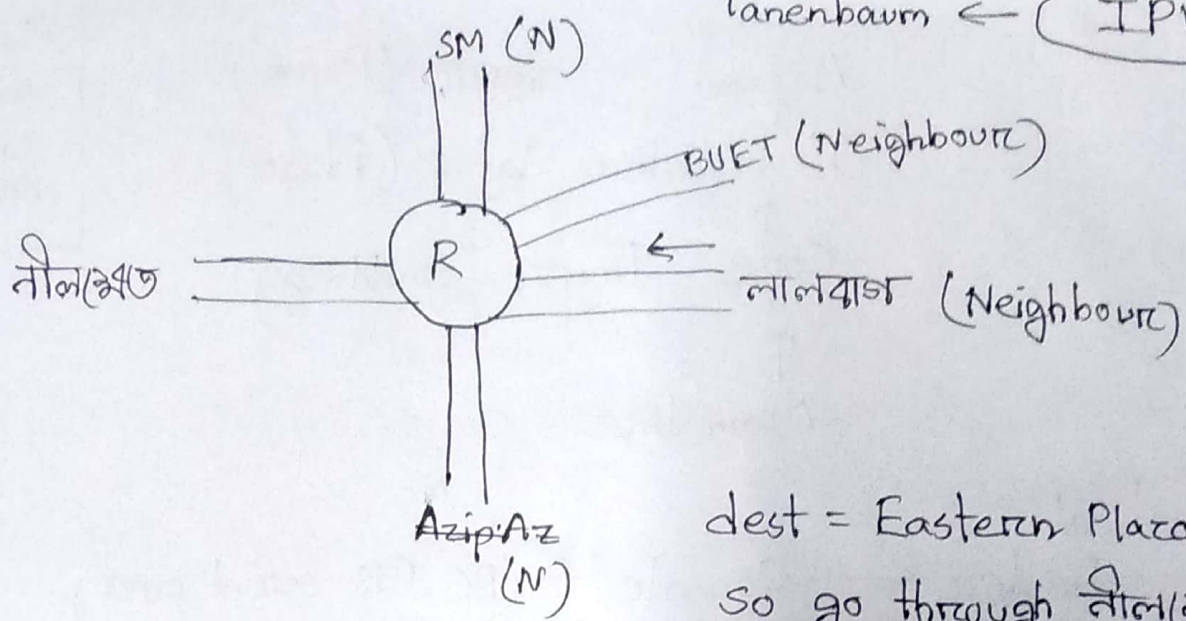enable (Go to user ⬧view to privilege mode)

BUETPC   → Router Ⓡ   Canada PC

□—————[Switch]———(R1)——(R2)————————□

Layer7   L2   L3   Layer7

| L7 |
| L4 |
| Pack |
| f |
| bit |

(R)

(R)

Toroaid

Tanenbaum ← (IPV4)

SM (N)

BUET (Neighbour)

R

নীল(মত) _____ ←

লালবাগ (Neighbour)

Azip·Az
(N)

dest = Eastern Plaza
so go through নীল(মত)

if dest = Motijheel then
follow SM but if SM
is block then best option
is BUET.

Routing info. protocol (RIP)
EIGRP (Distance Vector Routing Protocol)
OSPF (Open Shortest Path first)
ISIS (Intermediate System-
    Intermediate System)

IETF (Internet Engineering
    Task Force)

DHCP (Dynamic Host Configuration Protocol)

dest.	Next Hop

Subnet Mask
↳ Same network এ. এই
24 bit same
(192 · 168 · 43 ·) ① → Don't Care
Subnet Mask
Net   ↳ Host

Filtering↓ &

192·168·43·1

1111 _____ 1 0000 ___ 0
    24   8

(192·168·43·0) → Network Address

Broadcast address

Header for L3
IP header
↳ Source IP :
→ Dest IP :

Claass C Network :
Host 8 bit + Net 24 bit

16 + 16 = Class B
8 + 24 = " A

Broadcast : ~~250~~ 255 (43.255)
(সবার কাছে পাঠানো)
↳ last 8 bit all 1

Default Gateway :

```
        ____ R ____ sw
   SW
  / | \
PC1 PC2 PC3
```

OS corrupted

8 0/0 } gigabit 0/0
  0/1   0/1
S 0/0 } serial 0/0
  0/1

~~Port~~ RS232 — Serial Port
Router
↳ HWIC-2T to a port
      ↓
আগে off করে নিতে হয়।
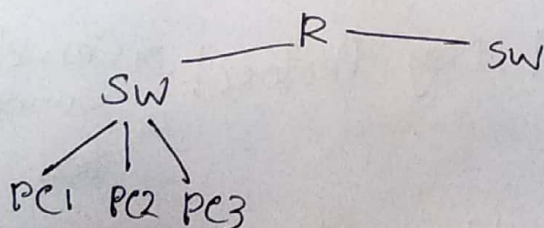
° flash0:c2900
↳ ওখানে OS loaded আছে
      > enable
      # show version
      # show flash
      # show ip interface brief
              ↙
      Port এর অবস্থা
      দেখা যায়

Toroaid

Router —— Router
⇓
Serial port দরকার

Sw —— Router
⇓
Grigabit port দরকার

43.2 ○ —————→ (More than one network)

S(L2)   R(L3)
R   □   S(L2)   ○ 44.2

43.3 ○ ———   43.4   44.1   ○ 44.3

default
gateway   (Router এর IP)
↓→ শুধু বাইরে যাবার জন্য)
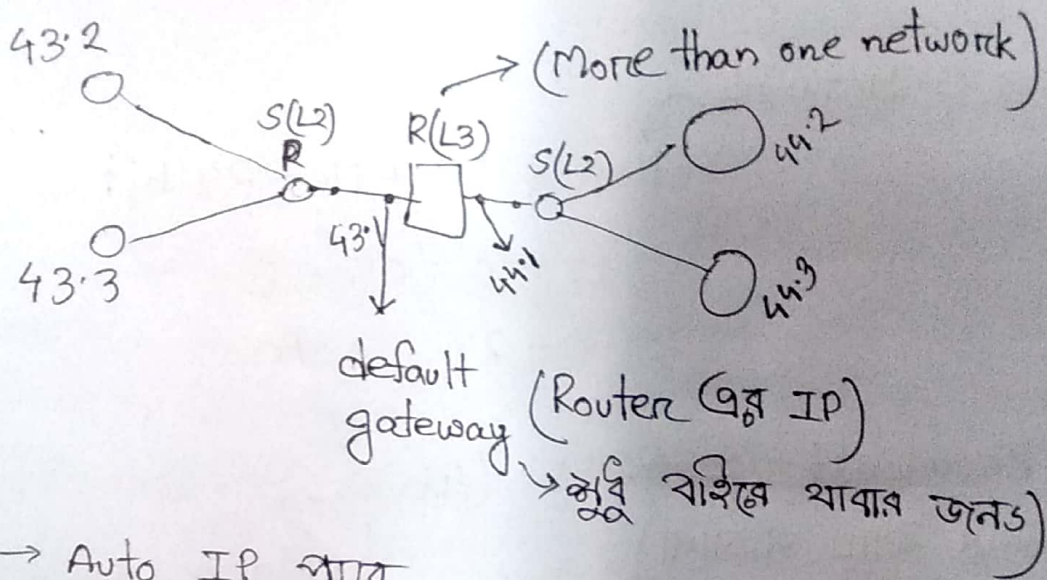
DHCP → Auto IP পায়
↳ DORA msg exchange করে
Discover offer

Ping : Internet Control Msg Protocol ↗ Can do
(ICMP)   connectivity
                                        test

IP is an unreliable protocol
Packet গেছে কীনা তা ensure করে না

ICMP echo request → 1st packet যা যায়
  "   "   reply → যেই packet ফেরত আসে

→ ip address (ip) (submask) №:

\# show run } current operating configuration

RAM → volatile
NVRAM → Non volatile

\# copy run start
└→ Starting configaration
└→ running configuration

run config file কে startup config হিসেবে NVRAM এ
load হবে

Router restart
↓
OS Load
↓
find startup
↓
copy
↓
take it into running config
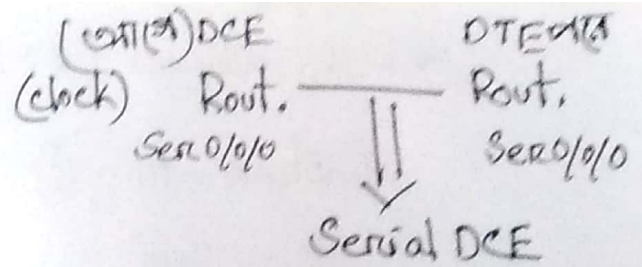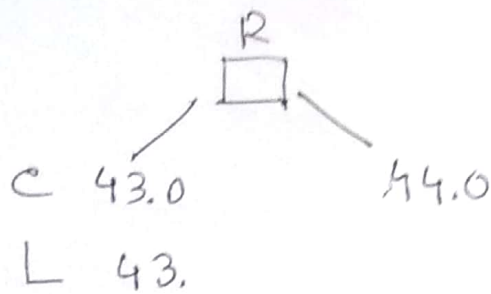
ARP resolution এর জন্য timeout হয়।

* show run
|
space } Previous command
| গুলো ছিম কা show
space করে

show ip route

c = connected

(আগে)DCE   DTEএর
(clock) Rout. ——|| —— Rout.
Ser 0/0/0   Ser 0/0/0

Serial DCE

New Network
↓
Give ne

R

C 43.0   44.0

L 43.

For Router 1
→ clock rate 64000
→ no shutdown

For Router 2
→ no shutdown

Why drop

43.3 → 44.3

R1 এর সাথে 43.1 and 45.1 আছে
So 44.3 কে recognize করতে পারে না।

Dynamic Routing!
router rip
network _43.0
network _45.0
} Give in Router1's config mode

R1 তার সাথ connected অগাইকে জানাতে চায়
so other networks know this network belongs to
R1.

Static → type in router1

ip route 192.168.44.0 subnet mask ~~0.0.0.255~~ ~~serial~~ s 0/0/0

for router2

ip route 192.168.43.0 subnet mask ~~0.0.0.255~~ ~~serial~~ s 0/0/0