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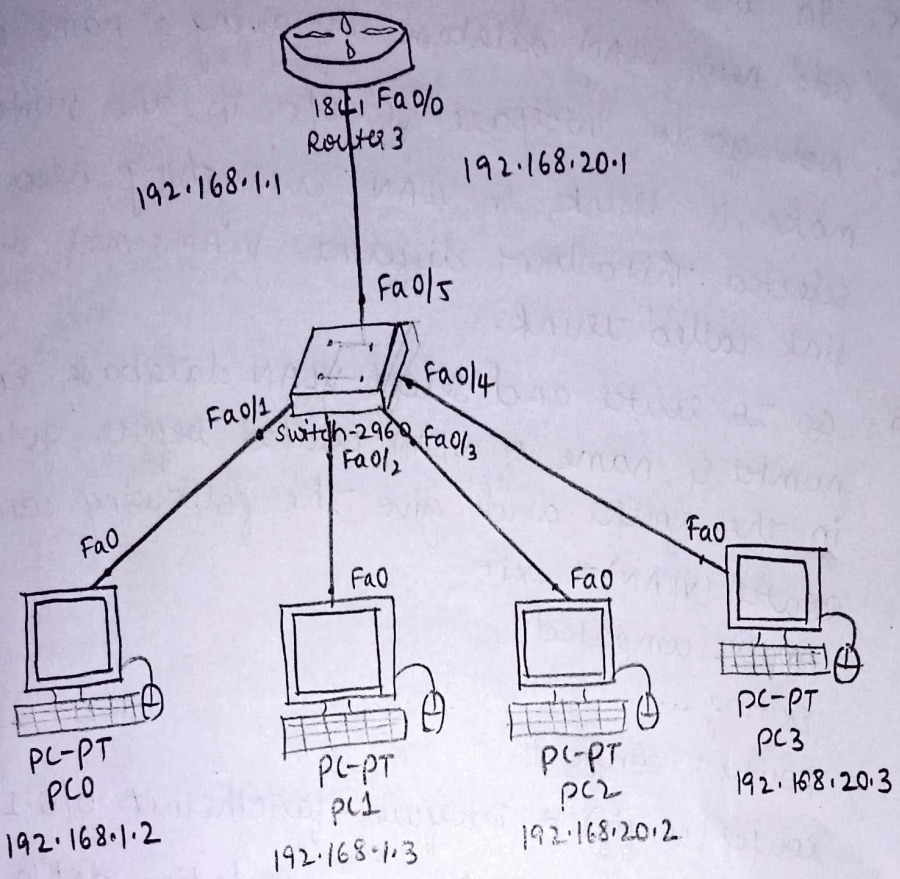
Lab-08

Aim: To construct a VLAN and make the PCs communi-cate among a VLAN

Topology:



Procedure:

Step 1: Create a topology as given above using 4 PCs, 1 switch (switch-2960) and a router (router-1841)

Step 2: Configure the Ip addresses for pc's as 192.168.1.2 & 192.168.1.3 for PC0 and PC1 and 192.168.20.2 & 192.168.20.3 for PC2 and PC3 respe-ctively.

Step 3: Configure the ip address for router using following commands

```
Router > enable
Router # config t
Router (config) # interface fastethernet 0/0
```

Router(config-if) # ip address 192.168.1.1 255.255.255.0
Router (config-if) # no shut
Router (config-if) # exit.

Step 4: Set the gateway as 192.168.1.1 for PC0 and PC1 and 192.168.20.1 for PC2 and PC3 respectively.

Step 5: In the switch, go to VLAN database and create/add new VLAN database by giving a name ex: newVlan (2)

Step 6: Now, go to Interface fa 0/5 in the switch and make it trunk, in VLAN, everything need to be selected. This allows different VLAN's over single link called trunk.

Step 7: Go to router and select VLAN database. Enter the number & name of VLAN created before, goto CLI in the router and give the following commands

Router (VLAN) # exit
APPLY completed
Exiting....
Router # config t
Router (config) # interface fastethernet 0/0.1
Router (config-subif) # encapsulation dot1q 2
Router (config-subif) # ip address 192.168.20.1 255.255.255.0
Router (config-subif) # no shut
Router (config-subif) # exit

Step 8: In the switch, make for fa 0/3 and fa 0/4 select VLAN and number as no given for VLAN while creating (here 2)

Now, ping from PC0 to PC3,

PC0: (In command prompt)

PC> ping 192.168.20.2

pinging 192.168.20.2 with 32 bytes of data:

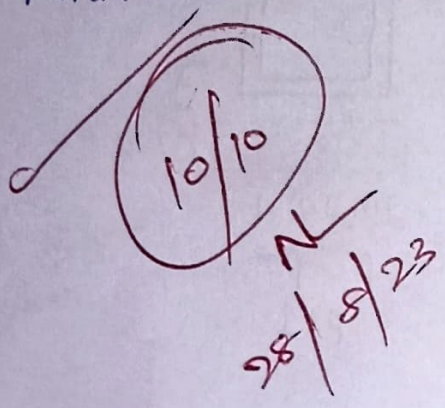
Reply from 192.168.20.2 : bytes = 32 time = 4ms TTL = 127
Reply from 192.168.20.2 : bytes = 32 time = 0ms TTL = 127
Reply from 192.168.20.2 : bytes = 32 time = 3ms TTL = 127
Reply from 192.168.20.2 : bytes = 32 time = 1ms TTL = 127

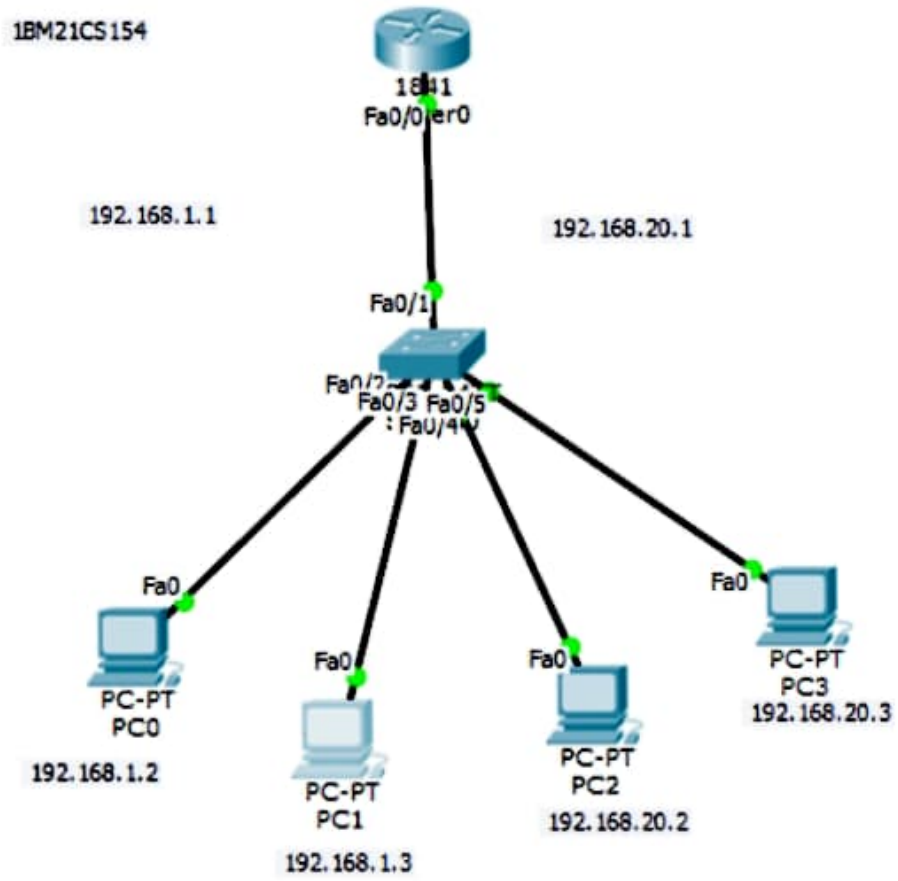
ping statistics for 192.168.20.2;

packets : sent = 4, Recieved = 4, Lost = 0 (0% loss)

Approximate round trip times in milli-seconds;

minimum = 0ms, maximum = 3ms Avg = 2ms



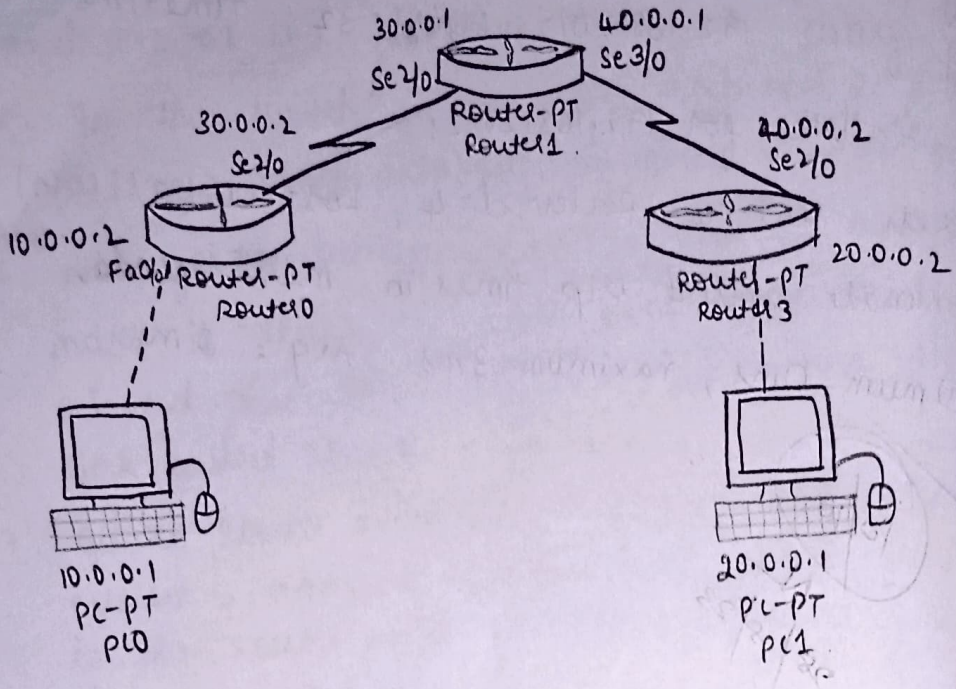


Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>ping 192.168.20.3

Pinging 192.168.20.3 with 32 bytes of data:

Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Reply from 192.168.20.3: bytes=32 time=0ms TTL=127
Reply from 192.168.20.3: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.20.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

PC>
```

Aim: To demonstrate the TTL/life of a packet

Topology:



Procedure:

Step1: Create a topology with 2 pcs and 3 routers as shown above.

Step2: Configure the Ip addresses as 10.0.0.1 and 20.0.0.1 for pc0 and pc1 respectively.

Step 3: Configure the Ip addresses for routers and static default rou

Router0;

Router # config t

Router (config) # interface fastethernet 0/0

Router (config-if) # ip address 10.0.0.2 255.0.0.0

Router (config-if) # ~~exit~~ no shut

Router (config-if) # exit

Router (config)# interface serial 2/0

Router (config-if) # ip address 30.0.0.2 255.0.0.0

Router (config-if) # no shut

Router (config-if) # exit

Router(config) # ip route 0.0.0.0 0.0.0.0 30.0.0.1.
Router(config) # exit.

Similarly, configure for router1 and router2.

Step4: In simulation mode, send a simple PDU from one pc to another.

Step5: click on PDU during every transfer to see the Inbound & outbound PDU details, use capture button to capture every transfer.

Observation

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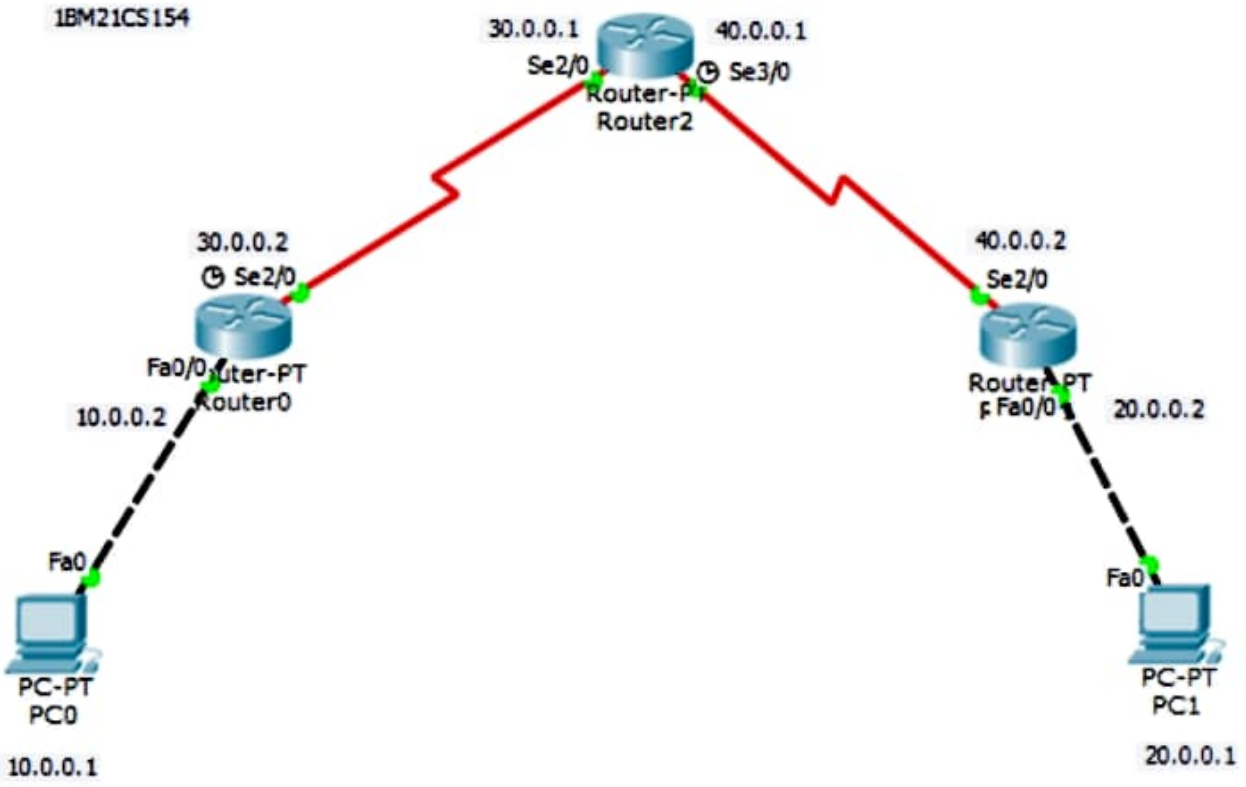
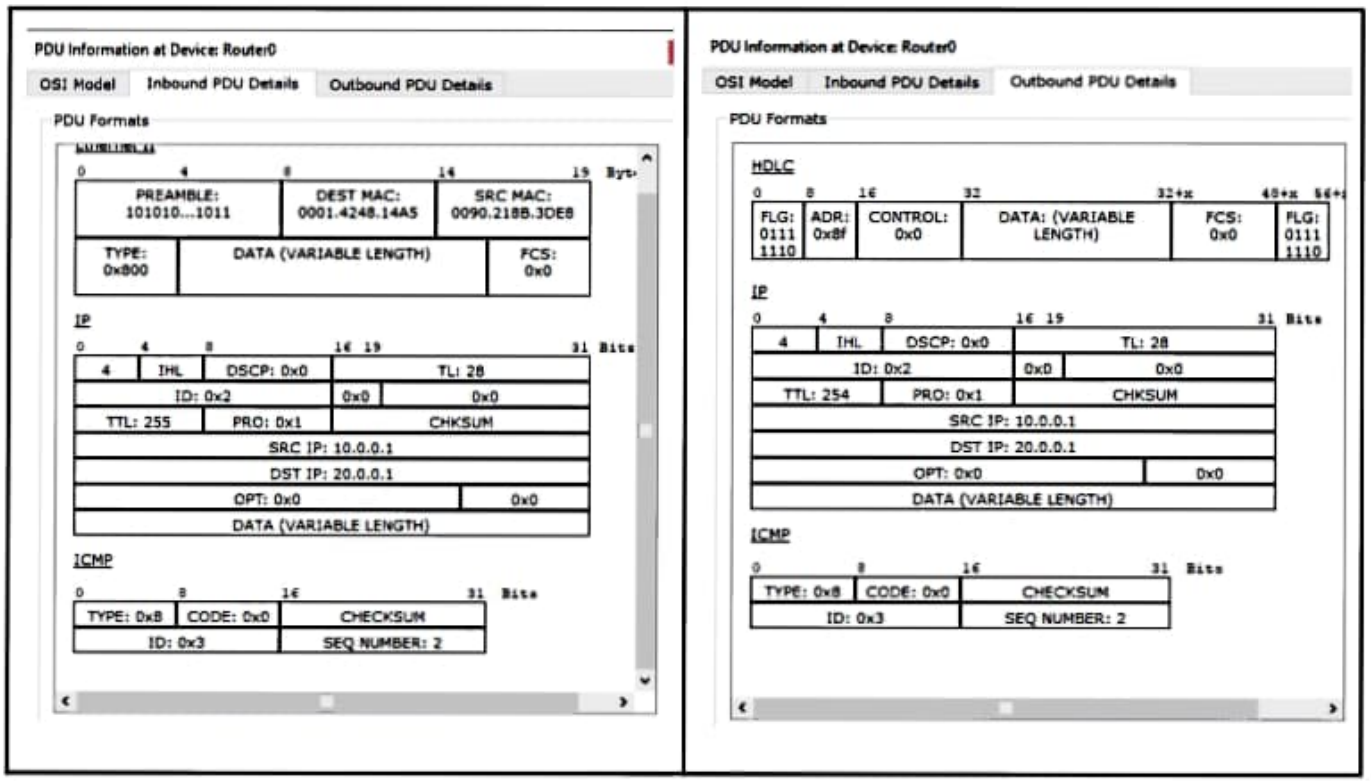
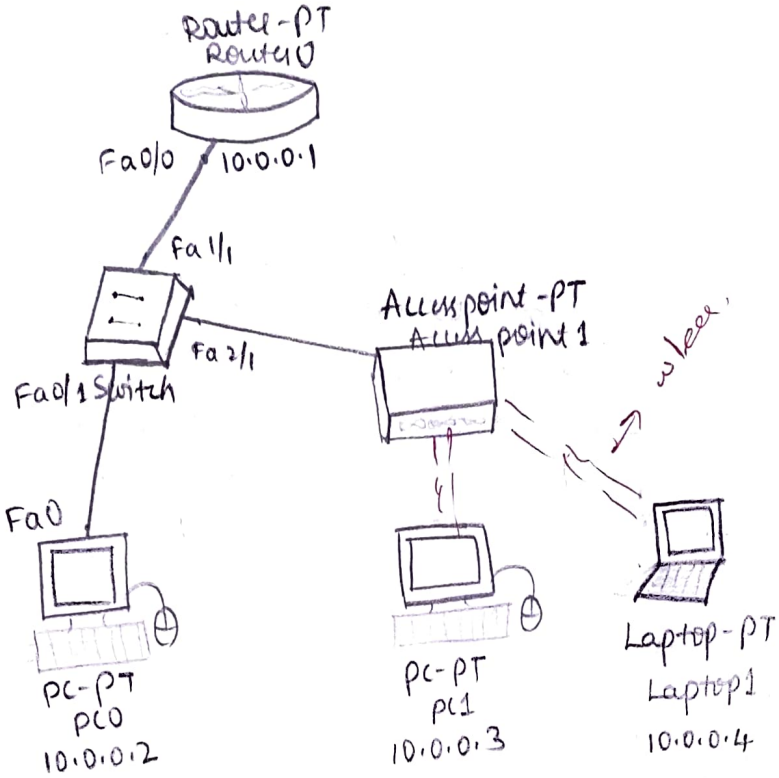

1BM21CS154
30.0.0.1
40.0.0.1
Se2/0
Se3/0
Router2
30.0.0.2
Se2/0
40.0.0.2
Se2/0
Fa0/0
Router0
10.0.0.2
Fa0
PC-PT
PC0
10.0.0.1
Fa0/0
20.0.0.2
Fa0
PC-PT
PC1
20.0.0.1


PDU Information at Device: Router0
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
PREAMBLE: 101010...1011
DEST MAC: 0001.4248.14A5
SRC MAC: 0090.21BB.3DE8
TYPE: 0x800
DATA (VARIABLE LENGTH)
FCS: 0x0
IP
4
IHL
DSCP: 0x0
TL: 28
ID: 0x2
0x0
TTL: 255
PRO: 0x1
CHKSUM
SRC IP: 10.0.0.1
DST IP: 20.0.0.1
OPT: 0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE: 0x8
CODE: 0x0
CHECKSUM
ID: 0x3
SEQ NUMBER: 2
PDU Information at Device: Router0
OSI Model
Inbound PDU Details
Outbound PDU Details
PDU Formats
HDLC
FLG: 0111 1110
ADR: 0x8f
CONTROL: 0x0
DATA: (VARIABLE LENGTH)
FCS: 0x0
FLG: 0111 1110
IP
4
IHL
DSCP: 0x0
TL: 28
ID: 0x2
0x0
TTL: 254
PRO: 0x1
CHKSUM
SRC IP: 10.0.0.1
DST IP: 20.0.0.1
OPT: 0x0
DATA (VARIABLE LENGTH)
ICMP
TYPE: 0x8
CODE: 0x0
CHECKSUM
ID: 0x3
SEQ NUMBER: 2

Aim: To construct a WLAN and make the nodes communicate wirelessly.

Topology:



Procedure:

Step1: Create the topology as shown above with PCs, Switch, router, Access point and laptop.

Step2: Configure PC0 and router as normally done.

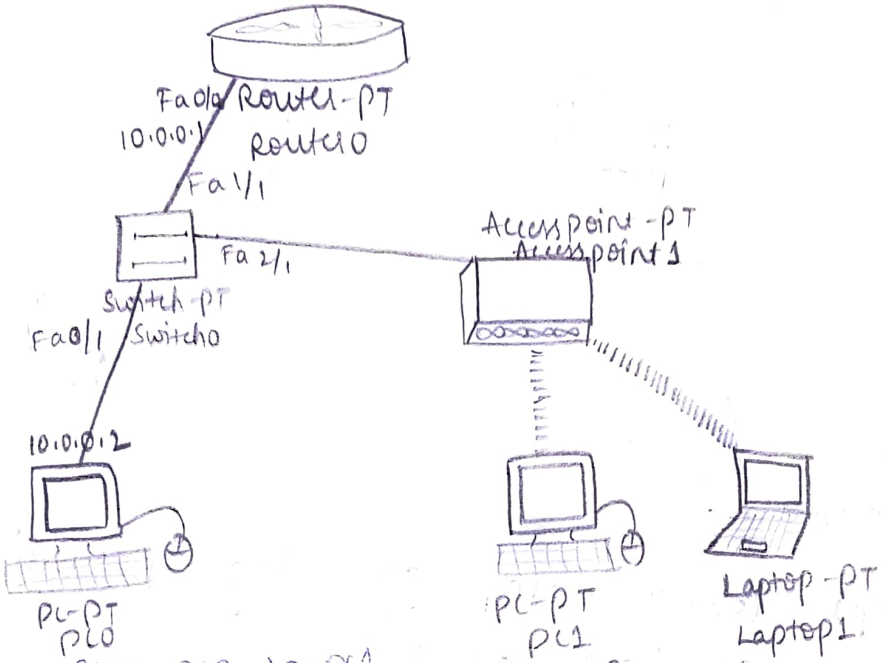
Step3: Configure the Accesspoint1, go to port1 and give SSID name. (any name)

Step4: Select WEP and give any 10 digit Hex key. (1234567890 here). Configure PC1 and laptop with wireless standards.

Step5: Switch off the device. Drag the existing PT-HOST-NM-1AM to the component listed in the LHS. Drag WMP300N wireless interface to the empty port. Switch on the device.

Step 6: In the config tab a new wireless interface would have been added. Now configure, SSID, WEP, WEP key, IP address and Gateway (as normally done) to the device.

Final topology on screen:



Now, ping from PC0 to PC1

In PC0 command prompt,

PC> ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time=47ms TTL=128
Reply from 10.0.0.3: bytes=32 time=32ms TTL=128
Reply from 10.0.0.3: bytes=32 time=35 ms TTL=128
Reply from 10.0.0.3: bytes=32 time=3ms TTL=128

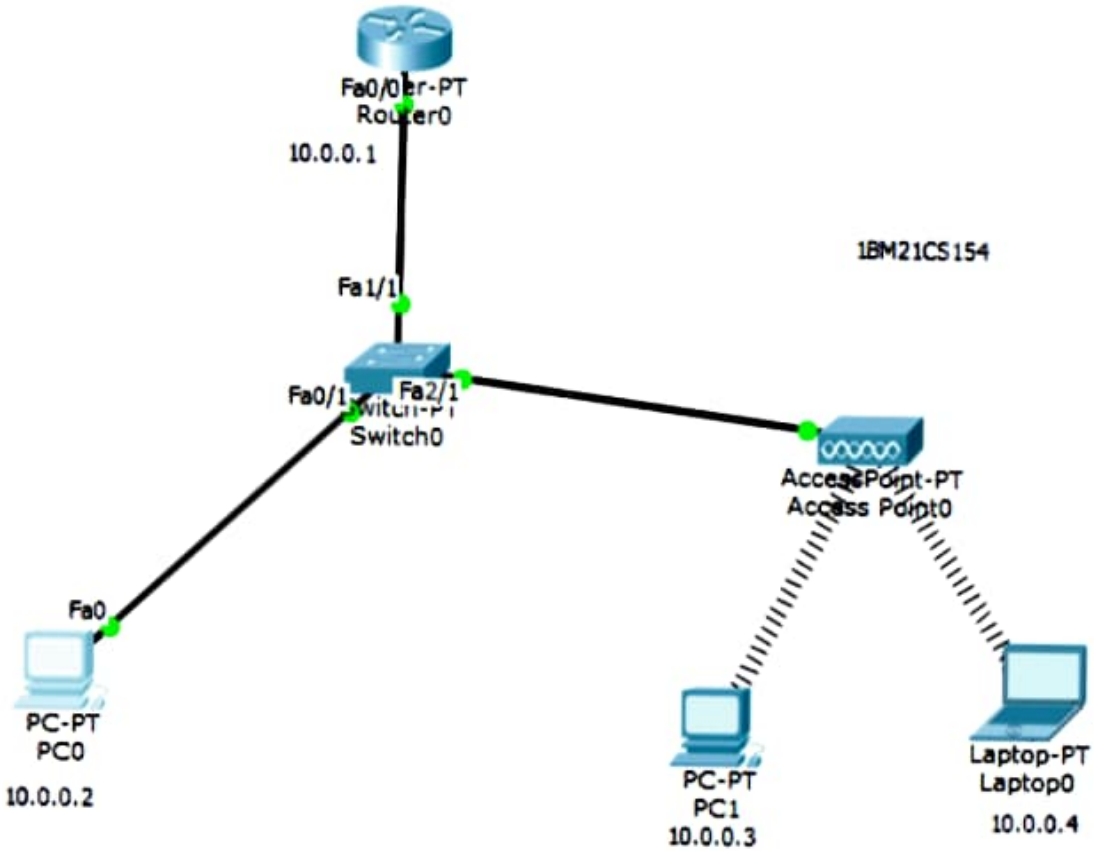
ping statistics for 10.0.0.3:

packets: sent=4, Recieved=4, Lost=0 (0% loss)

Approximate round-trip time in milli-seconds:

minimum=3ms, Maximum=47ms, Average=29 ms

NOTE: Observation in such expt




```
PC>ping 10.0.0.4

Pinging 10.0.0.4 with 32 bytes of data:

Reply from 10.0.0.4: bytes=32 time=34ms TTL=128
Reply from 10.0.0.4: bytes=32 time=22ms TTL=128
Reply from 10.0.0.4: bytes=32 time=12ms TTL=128
Reply from 10.0.0.4: bytes=32 time=9ms TTL=128

Ping statistics for 10.0.0.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 9ms, Maximum = 34ms, Average = 19ms

PC>
```