

Program 1

LAB WEEK 1

To demonstrate the transmission of a simple PDU between 2 devices connected using a Hub and a Switch.

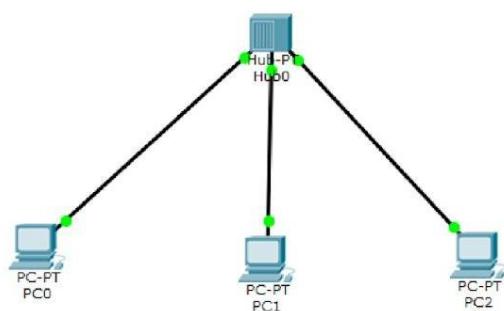


Figure 1: Using Hub

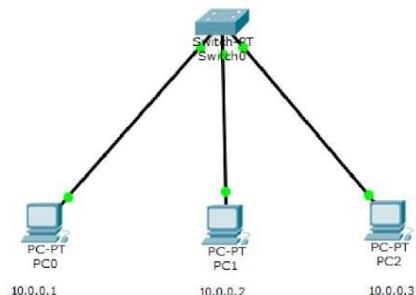


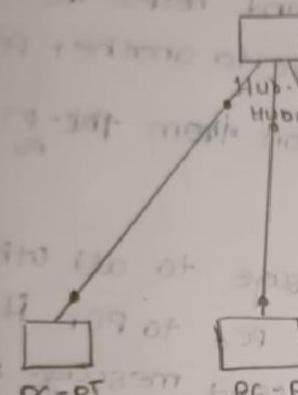
Figure 2: Using Switch

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CN LAB

Aim: To demonstrate the transmission of a single PDU between 2 devices connected using a hub and a switch.

Topology: Star Topology.



Configuration:

1. First we select the $\frac{\text{three}}{\text{PC}_0, \text{PC}_1, \text{PC}_2}$, PC-PT , PC-PT and PC-PT .
2. After we selected one hub and placed above.
3. And we connected through Automatically choose connection Type from each pc to hub.
4. from each pc to hub.
5. And we select the PC_0 and assing the IP address to PC_0 IP Address 10.0.0.3 and click subnet Mask 255.0.0.0 and close the IP address.
6. and we place the cursor on the pc pt will show that pc-PT is connected and

5. And given PDU to the PC-PT and PC-PT
and Stimulator Mode after connected and click
on auto capture play to observe the transmission
of single PDU b/w two devices is connected.

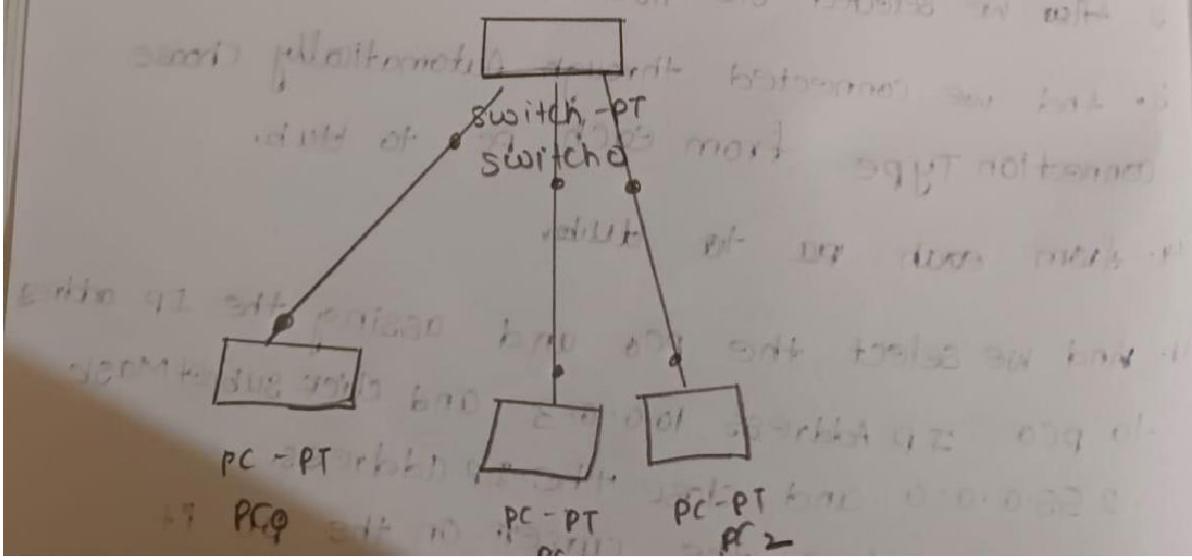
Observation:

Hub is a unintelligent devices that helps us to connect multiple PC-PT and helps to pass the message from PC to another PC. And if we particularly mention them PC-PT and PC-PT +

The Hub will send the message to all other PC but we mention from PC₀ to PC₁, it shows that PC₀ to PC₁ is send message tick(V) if GUI shows and then other PC will(X) mark telling that the message is not sent other

PC. ~~PC₀ send T9-39, T9-39, T9-39 and fails on tick~~

Topology: Star topology:



Observation:

As we see before we used the switch hub
Instead And now we used switch here the configuration
will be same
But here when we used switch it send the
message to the PC₁ to PC₂ not to other
PC.

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Program 2

LAB WEEK 2

- i) To demonstrate configuration of IP addresses to the Routers and explore ping command.

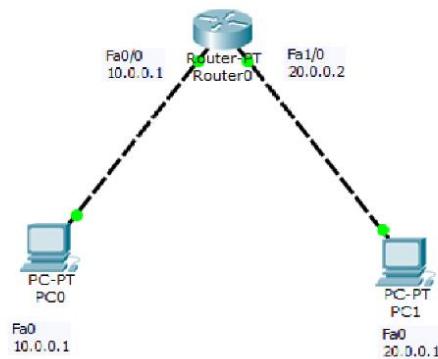


Figure 1: Topology

A screenshot of a Command Prompt window titled 'Command Prompt'. The window displays the output of a ping command. The user enters 'ping 10.0.0.2' and receives four 'Request timed out.' responses. Then, the user enters 'ping statistics for 10.0.0.2' and receives four replies from the target IP. Finally, the user enters 'approximate round trip times in milli-seconds:' and sees minimum, maximum, and average values of 0ms.

```
Packet Tracer PC Command Line 1.0
PC>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 10.0.0.2:
  Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
PC>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=0ms TTL=255

Ping statistics for 10.0.0.2:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
  Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>
```

Figure 2: ping command output

LAB 2

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Experiment - 2

To demonstrate configuration of ip address to the routers and explore the ping command.

Commands.

Router >enable

Router #

→ Enter

2) enable

3) config t

4) interface fastethernet0/0

5) ip address 10.0.0.2 255.0.0.0

6) no shutdown.

Router >enable

Router # config t

Enter configuration commands, one per line

End with ENTR

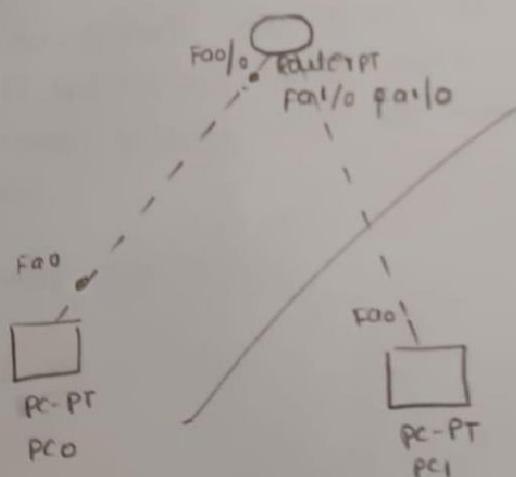
Router (config)# interface faste

fastethernet0/0

Router (config-if)# ip address 10.0.0.2 255.0.0.0

configuration:

Topology:



configuration:

1) Select the generic pc-PT PC0 and PC1

2) And take one generic router and the pc-PT PC0 and Router PT through Automatically choose connection Type through connection.

3) Then give the ipaddress for PC-PT is 10.0.0.1
PC0

3) And give

20.0.0.2

v) And selected

First

then gave P

1) Enter

2) Enable

3) config

4) interface

5) ip add

should ej

of PC-PT

6) shut

after th

start d

20.0.

5) And

then

in th

6) same

7) The

prompt

writ

ping S

③ And give the ip address different for PC-PT is
PC₁
20.0.0.2

4) And select Router select CLI (command line interface)

then ^{First} press Enter and write commands

1) enter

2) enable

3) config

4) interface fastethernet 0/0

5) ip address Here the ip address for fasternet 0/0
should ~~give~~ the different number at last digit
of PC-PT means here 10.0.0.2

6) shut down. then red signal turn to green

after that give the exit.

start doing 3) command for Fastether net 1/0.

20.0.0.2. same steps.

5) And after select pc and select config
then give the ~~Gateway~~ address as given
in the photo. 10.0.0.2

6) Same for PC-PT PC₁ 20.0.0.2.

7) Then go to desktop and select command
prompt

write ping write destination address of 20.0.0.2

Ping statistics for 20.0.0.2:

packets: send = 4 , received = 4 , lost = 0 (0% loss).

observation:

After typing the ping command in the command prompt

ping 20.0.0.2

Pinging 20.0.0.2 with 32 bytes of data:

Reply from 20.0.0.2: bytes=32 time=0ms TTL=255

Ping statistics for 20.0.0.2:

packets: sent=4, received=4, lost=0 (0% loss)

Approximate round trip times in milliseconds:

Minimum=0ms, Maximum=0ms, Average=0ms

Here the from source to destined it received.

Program 3

LAB WEEK 3

To demonstrate configuration of default and static routes through a connection of routers.

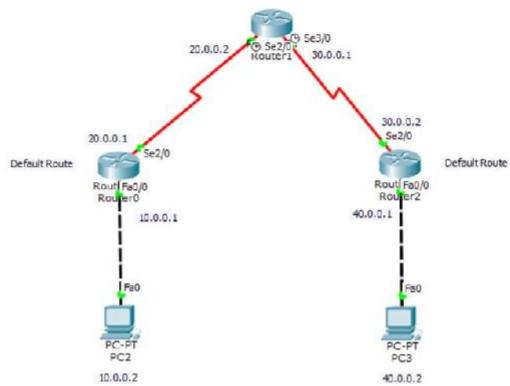


Figure 1: Topology

Command Prompt

```
PC>ping 40.0.0.2
Pinging 40.0.0.2 with 32 bytes of data:
Reply from 40.0.0.2: bytes=32 time=21ms TTL=128
Reply from 40.0.0.2: bytes=32 time=16ms TTL=123
Reply from 40.0.0.2: bytes=32 time=9ms TTL=123
Reply from 40.0.0.2: bytes=32 time=9ms TTL=123

Ping statistics for 40.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 9ms, Maximum = 21ms, Average = 13ms
```

Figure 2: ping command output

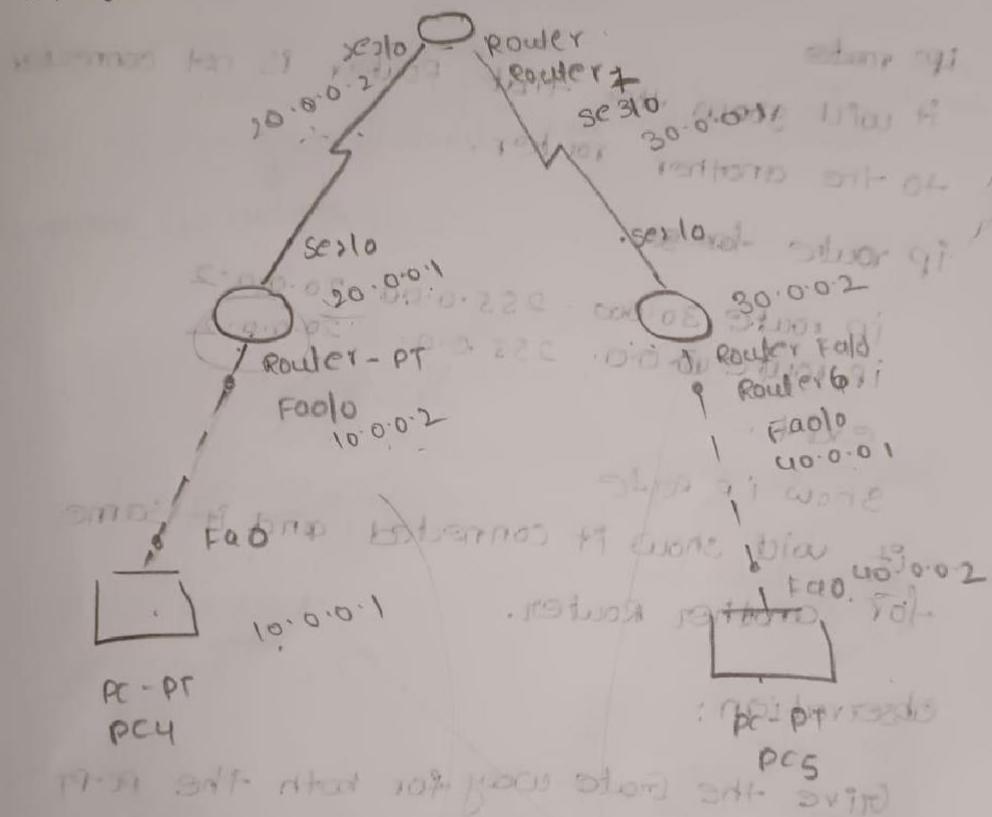
Experiment - 3

To demonstrate the configuration of default routes

to the router and the main network.

What is meant by the default gateway of the PC?

Topology:



Configuration:

~~selected the generic PC-PT PCo and PC~~

To the Router-PT \rightarrow Router Fa0

ip address route
destination network IP
destination subnet mask

Next hub.

this command is used for

\rightarrow for reaching the unknown dev

- 1) Select PC-PT and Router and connect
the PC-PT and Router.
- 2) Connect the PC-PT and Router
- 3) And go to the Router CLI and show ip route

IP routes
It will show that Router is not connected
to the another router.

ip route for

ip route 30.0.0.0 255.0.0.0 20.0.0.2
ip route 40.0.0.0 255.0.0.0 20.0.0.2

exit.

Show IP route.

It will show it connected and it same
for another Router.

Observation:

Give the Gate way for both the PC-PT
and command prompt.

Ping 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data.

Reply from 40.0.0.2:
bytes = 32 + time = 9ms TTL = 128
Reply from 40.0.0.2:
bytes = 32 + time = 9ms TTL = 128
Reply from 40.0.0.2:
bytes = 32 + time = 9ms TTL = 128
Reply from 40.0.0.2:
bytes = 32 + time = 9ms TTL = 128

Ping

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ALB

Connec

cont
Static

Defaut

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Enabl

Confia

ip ro

~~ping statistics for 192.0.2.1~~
packets: sent=4, received=4, lost=0 (0% loss)

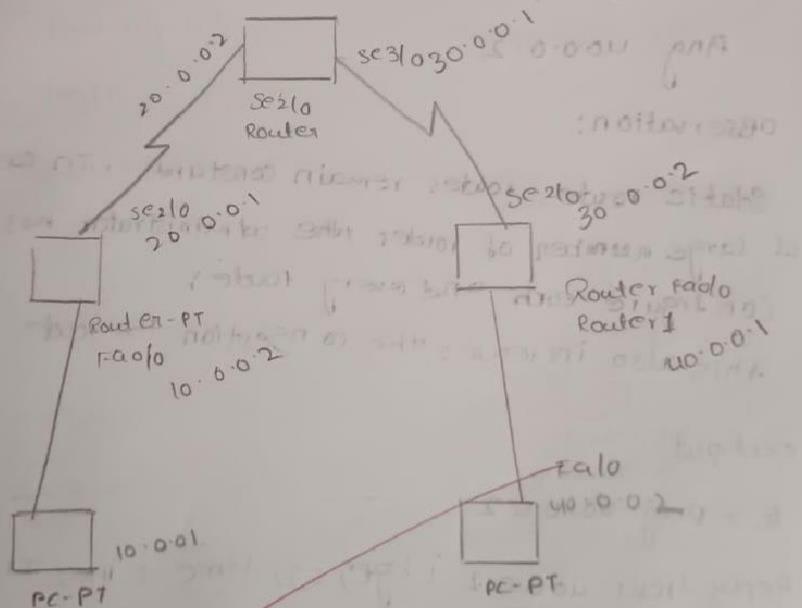
ip route

connected

22/10/24

Experiment-4:

Aim: To configure default and static route through connection of routers



configuration;

$\text{SnHg} \rightarrow$ routes remain constant.

default →

for Router 1
Enable

Config t.

ip route 0.0.0.0 0.0.0.0 20.0.0.2

$$\begin{aligned} \text{1ms TTL} &= 125 \\ \text{2ms TTL} &= 125 \\ \text{3ms TTL} &= 125 \\ \text{5ms TTL} &= 125 \end{aligned}$$

Expe

AIM: To v
accessing
a PC in

After con
exit
type this
host name

Reconfiguring #

Topology

Configura

select
pc and

and se

and se

Select

Select

and for the Router 2:

enable
configt

ip route 0.0.0.0 0.0.0.0 30.0.0.1

And for the middle Router (top router)

write the two command 20.0.0.1

ip route 10.0.0.0 255.0.0.0 30.0.0.2

ip route 10.0.0.0 255.0.0.0 20.0.0.1

ip route 10.0.0.0 255.0.0.0 30.0.0.2

open desktop command prompt of PC and type

Ping 40.0.0.2

Observation:

Static route - routes remain constant. In case of
of large number of routers, the administrator has to
configure each and every router,
this also increases the congestion the route,

Output:

PC > ping 40.0.0.2

Reply from 40.0.0.2 : bytes: 32 time = 11ms TTL=128

Reply from 40.0.0.2 : bytes: 32 time = 10ms TTL=128

Reply from 40.0.0.2 : bytes: 32 time = 13ms TTL=128

Reply from 40.0.0.2 : bytes: 32 time = 16ms TTL=128

Ping statistics for 40.0.0.2

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Packets: sent = 4 received = 4 lost = 0 (0%), loss = 0%

Approximate round trip time in millisecond

(Minimum = 10ms, Maximum = 18ms, Average = 14ms)

Program 4

LAB WEEK 4

- i) To understand the operation of TELNET by accessing their router placed in the server room from a PC in IT office.

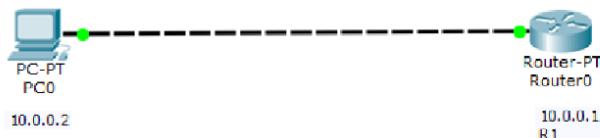


Figure 1: Topology

```
Router# Physical Config CLI

----- System Configuration Dialog -----  
Continue with configuration dialog? [yes/no]: n  
  
Press RETURN to get started!  
  
Router>enable  
Router>configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
Router>configurable-interface FastEthernet0/0  
Router>exit  
Router>config ifaceFast  
Router>config interface FastEthernet0/0  
Router>end<br/>shutdown  
  
Router(config)#  
LINE:0->LINE:0: Interface FastEthernet0/0, changed state to up  
LINE:0->LINE:0: Line protocol on Interface FastEthernet0/0, changed state to up  
Router(config)ip address 10.0.0.1 255.0.0.0  
Router(config)ip subnetmask 255.0.0.0  
Router(config)interface FastEthernet0/0  
Router(config-if)ip address 10.0.0.1 255.0.0.0  
Router(config-if)ip port name R1  
  
* Invalid input detected at `''' marker.  
Router(config-if)#hostname R1  
* Invalid input detected at `''' marker.  
Router(config-if)#hostname R1  
R1(config)  
R1(config)#  
R1(config)#router rip  
R1(config-router)enable config  
* Invalid input detected at `''' marker.  
R1(config-router)#enable secret 0  
R1(config-line)vry 0 5  
R1(config-line)login  
R1(config-line)#  
* Login disabled on line 133, until 'password' is set  
* Login disabled on line 133, until 'password' is set  
* Login disabled on line 134, until 'password' is set  
* Login disabled on line 134, until 'password' is set  
* Login disabled on line 135, until 'password' is set  
* Login disabled on line 135, until 'password' is set  
* Login disabled on line 136, until 'password' is set  
* Login disabled on line 136, until 'password' is set  
R1(config-line)password 01  
R1(config-line)secret  
R1(config)  
R1(config)#  
R1(config)  
*ZXR-5-CONT2_2: Configured from console by console  
*ZXR-5-CONT2_2: Configured from console by console  
Building configuration...  
[OK]  
R1#
```

Figure 2: Router CLI

Command Prompt

```
Packet Tracer PC Command Line 1.0
PC>PING 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:
Reply from 10.0.0.1: bytes=32 time=0ms TTL=255

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>PINGC 10.0.0.1

Pinging 10.0.0.1 with 32 bytes of data:
Reply from 10.0.0.1: bytes=32 time=0ms TTL=255

Ping statistics for 10.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC>telnet 10.0.0.1
Trying 10.0.0.1 ...Open

User Access Verification

Password:
R1>enable
Password:
R1#
```

Figure 3: PC Command Prompt

Experiment: 05

AIM: To understand the operation of TELNET by accessing the router placed in the server room from a PC in it office.

After configuration

exit

type this commands.

host name R1

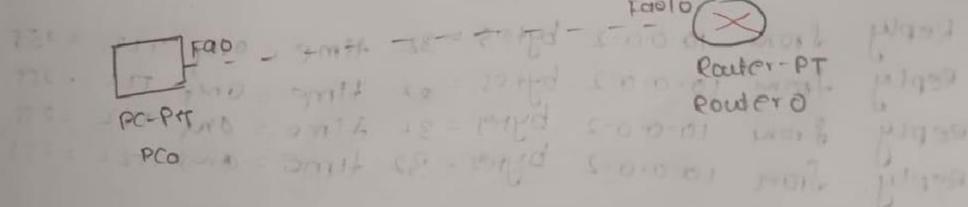
R1(config)# enable secret P0

line vty 0 5

login

password P1

Topology:



Configuration:

Select PC and Router. And connect these two PC and Router through. Automatically choose connection type.

And select PC and set ip address 10.0.0.1

And select Router and give configuration 10.0.0.2

Select PC and give the gateway.

Select Router and type exit

type the commands.
 host name R1
 R1(config)# enable secret po → assign the password.
 line vty 0 5 → this line do here is to enter from user to privilege mode.
 login
 password po
 then type two times exit exit
 R1# wr → write memory is to save change in memory we have done.
 Building configuration
 [OK]
 R1#

Output:

Ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2 bytes = 32 time = 0ms TTL = 255
 Reply from 10.0.0.2 bytes = 32 time = 0ms TTL = 255
 Reply from 10.0.0.2 bytes = 32 time = 0ms TTL = 255
 Reply from 10.0.0.2 bytes = 32 time = 0ms TTL = 255

Ping statistics for 10.0.0.2:

Packets: sent = 4, received = 4, lost = 0 (0.0% loss).

Approximate round trip times in milliseconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC > telnet 10.0.0.2 → The is for remotely access
 password: po
 R1> enable
 Password: po
 R1#

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 Aim: a) To
 server pr
 b) To con
 server r

Configuration
 1) Conne
 2) to
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program 5

LAB WEEK 5

- a) To configure IP addresses of the host using DHCP server present within the LAN.

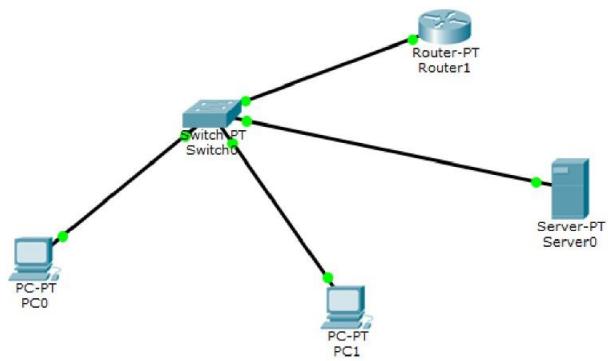


Figure 1: Topology

A screenshot of a computer interface titled "PC0". The window has tabs at the top: "Physical", "Config", "Desktop", and "Custom Interface". The main area is a "Command Prompt" window with a blue header bar containing the text "Command Prompt". The prompt "PC>" is visible at the bottom of the window. The window displays the output of a ping command:

```
Packet Tracer PC Command Line 1.0
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=0ms 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 = 0ms, Maximum = 0ms, Average = 0ms

PC>
```

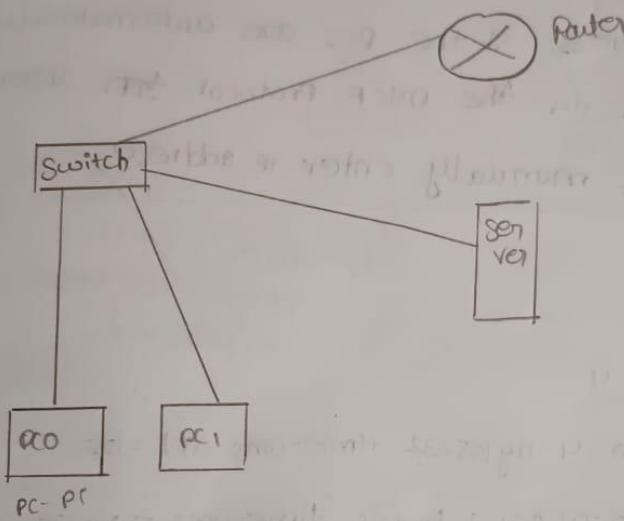
Figure 2: Output

12/11/24

Experiment - 06

Aim: a) To configure IP address of the host using DHCP server present within the LAN.

b) To configure IP address of the host using DHCP server present in the different LAN.



Configuration:

1) Connect to element as shown

2) to set router IP address 10.0.0.2

3) In server

ip address = 10.0.0.1

gateway = 10.0.0.2

under services go to DHCP

pool name: server pool

default gateway = 10.0.0.2

DNS server = 10.0.0.1

click on save.

w) go to PC0 + and PC1 under IP

address click on DHCP P

PC0 = 10.0.0.3 PC1 = 10.0.0.4.

5) upon ping PC1 from PC0, there is 0% loss.

Observation.

The IP address of the PCs are automatically generated via the DHCP protocol ~~in~~ user need not manually enter IP address

Output:

↓ The main information negot Know about this experiment

PC>ping 10.0.0.4

pinging 10.0.0.4: bytes=32 time=0ms TTL=128

Reply from 10.0.0.4: bytes time=2ms 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=0ms, Maximum=2ms=2ms, Average=0ms

b) To configure IP addresses of the host using DHCP server present in different LAN.

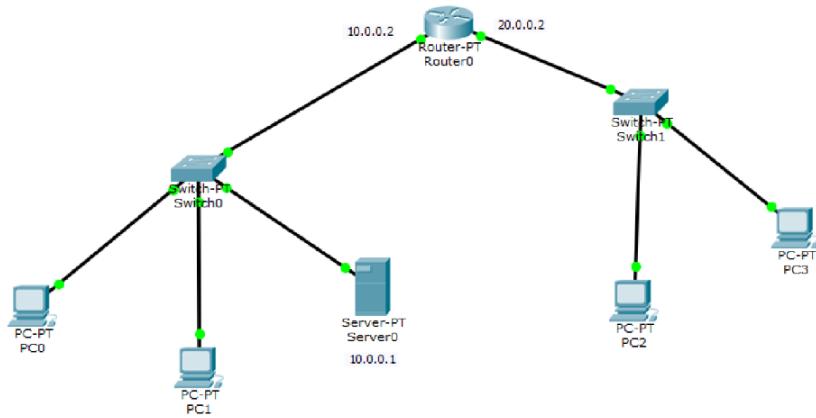


Figure 5: Topology

```
PC>ping 20.0.0.3

Pinging 20.0.0.3 with 32 bytes of data:

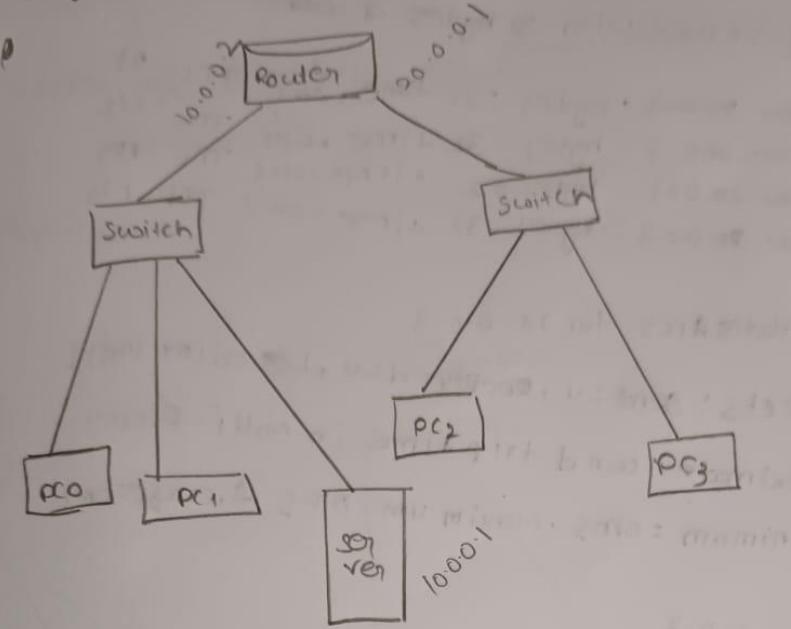
Reply from 20.0.0.3: bytes=32 time=0ms TTL=127
Reply from 20.0.0.3: bytes=32 time=0ms TTL=127
Reply from 20.0.0.3: bytes=32 time=3ms TTL=127
Reply from 20.0.0.3: bytes=32 time=0ms TTL=127

Ping statistics for 20.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 3ms, Average = 0ms

PC>
```

Figure 6: Output

Topology:



configuration:

- Follow the steps of 6a.
- set router ip address 20.0.0.1 in fastethernet 1/0
- int fastethernet 1/0
- do ip helper 10.0.0.1
- same fastethernet
- server pool2
- 20.0.0.1
10.0.0.1
- start ip 1st box = 20
- generate ip addresses for PC2 and PC3.

Observation:

Successful ping in 20.0.0. as well as 10.0.0.0.
and 10.0.0.1

Out Put:

Ping 20.0.0.3

Pinging 20.0.0.3 with 32 bytes of data:

Reply from 20.0.0.3: bytes = 32 time = 0ms TTL = 28
Reply from 20.0.0.3: bytes = 32 time = 0ms TTL = 28
Reply from 20.0.0.3: bytes = 32 time = 0ms TTL = 28
Reply from 20.0.0.3: bytes = 32 time = 0ms TTL = 28

Ping statistics for 20.0.0.3:

packets: sent = 4, received = 4, lost = 0 (0% loss),

approximate round trip time in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms.

Ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data.

Reply from 10.0.0.3: bytes = 32 time = 0ms TTL = 27
Reply from 10.0.0.3: bytes = 32 time = 0ms TTL = 27
Reply from 10.0.0.3: bytes = 32 time = 0ms TTL = 27
Reply from 10.0.0.3: bytes = 32 time = 0ms TTL = 27

Ping statistics for 10.0.0.3:

packets: sent = 4, received = 4, lost = 0 (0% loss),

approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms.

To con-

Mapping

Topolog

PC-
01
11

config

i) cont
under

First
name

.. exec
ii) Go
need
iii)

Program 6

LAB WEEK 6

To configure DNS server to demonstrate mapping of IP addresses and domain names.

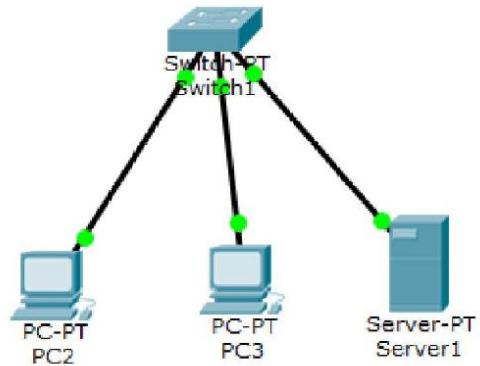


Figure 1: Topology

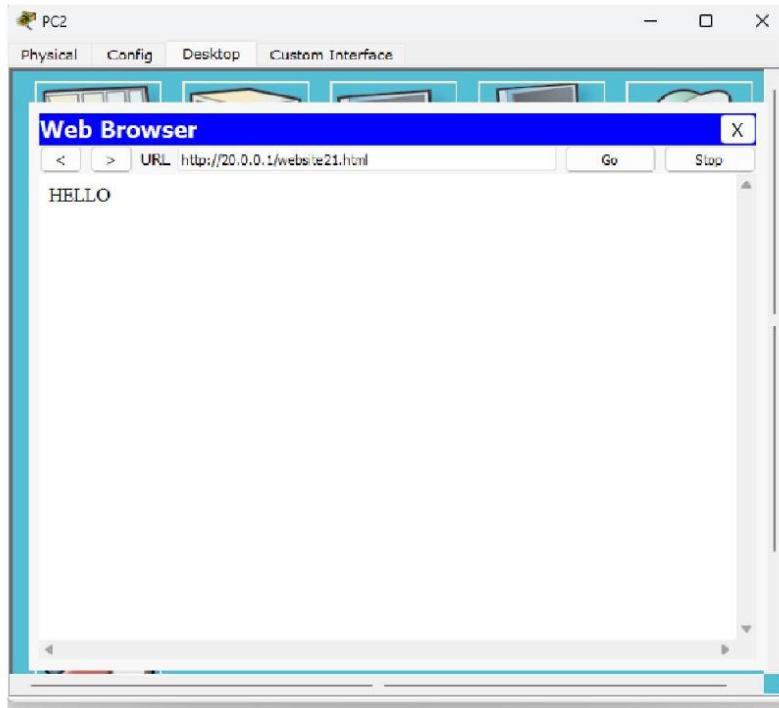
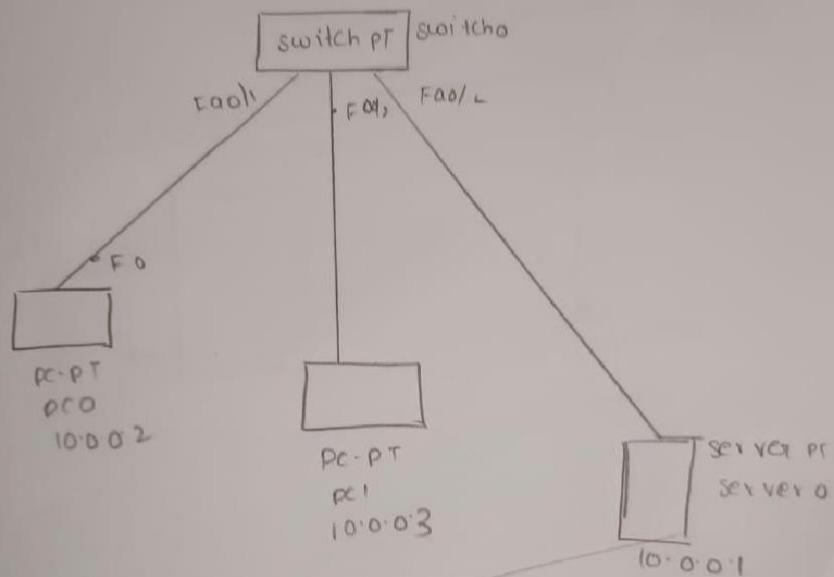


Figure 2: Output from PC2

To configure dns server to demonstrate the
mapping of IP address and domain names

Topology:



configuration:

- i) configure the ipaddress for the server as 10.0.0.1 under services configure DNS

First turn on the DNS services and give a name web1 and address as 10.0.0.1

~~else~~

- ii) Go to HTTP and edit the index.html if needed.

- iii) configure the end devices by giving them ip address as 10.0.0.2 10.0.0.3

- iv) Under PC0 open the web browser and

search for web1.

Observation:

On searching the name on the web browser of the PC we will be able to see the webpage.

Program 7

LAB WEEK 7

To configure RIP routing protocol in Routers.

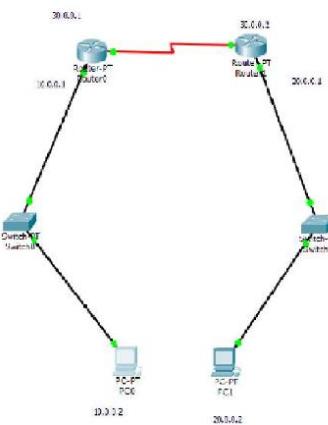


Figure 1: Topology

```
Packet Tracer Command Line 1.0
Running 10.0.0.1

Configuring 10.0.0.1

Configuring 10.0.0.1 with 0 bytes of data.

Reply from 10.0.0.1: gateway timeout 1000ms

Ping statistics for 10.0.0.1:
    Successes = 4, Losses = 0 (0% loss),
Approximate round trip times in millisecond:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Configuring 10.0.0.1
Ping statistics could not since user 10.0.0.1. Please enter the name and try again.
Configuring 10.0.0.1

Configuring 10.0.0.1 with 0 bytes of data.

Reply from 10.0.0.1: gateway timeout 1000ms

Ping statistics for 10.0.0.1:
    Successes = 4, Retried = 0, Losses = 0 (0% loss),
Approximate round trip times in millisecond:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Configure 10.0.0.1

Configuring 20.0.0.1 with 0 bytes of data.

Reply from 20.0.0.1: gateway timeout 1000ms

Ping statistics for 20.0.0.1:
    Successes = 4, Retried = 0, Losses = 0 (0% loss),
Approximate round trip times in millisecond:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Configuring 20.0.0.1

Configuring 20.0.0.1 with 0 bytes of data.

Reply from 20.0.0.1: gateway timeout 1000ms

Ping statistics for 20.0.0.1:
    Successes = 4, Retried = 0, Losses = 0 (0% loss),
Approximate round trip times in millisecond:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

Configuring 20.0.0.1
Ping statistics could not since user 20.0.0.1. Please enter the name and try again.
Configuring 20.0.0.1
```

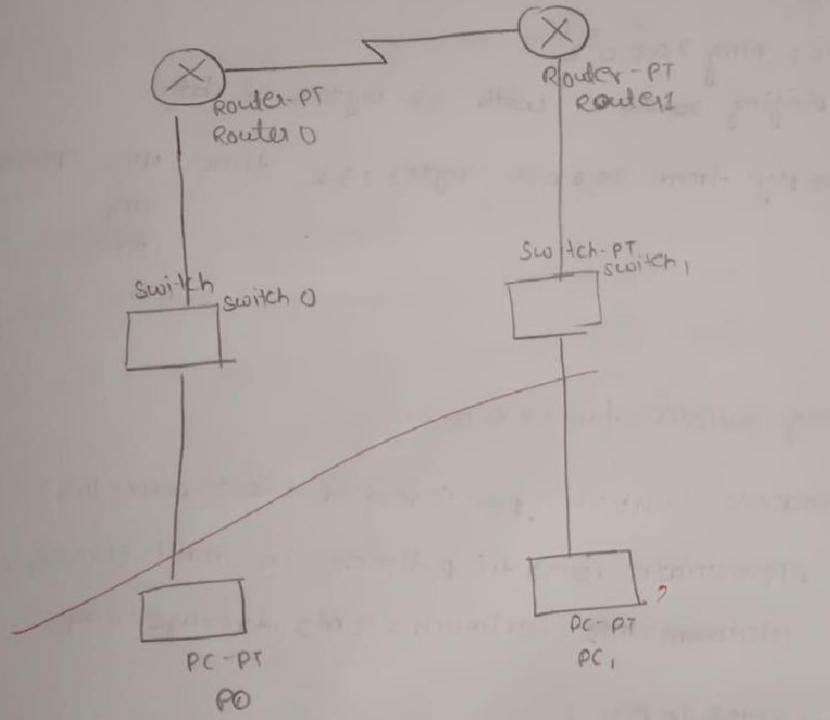
Figure 2: Output

19/11/24

Experiment - 8

Aim: Configuring RIP (routing information protocol)

Topology:



Configuration:

1. Select 2 PCs, 2 switches & 2 Router & connect all the end devices
2. Set IP address & gateway for PC & Router
IP : PC0 = 10.0.0.2 PC-1 = 20.0.0.2 Router0 = 30.0.0.1
Router 1 = 30.0.0.2

Gateway pco-10.0.0.1 PC-1-20.0.0.1

3. select Router 0, select RIPv2 add networks
as 10.0.0.0 & 20.0.0.0, follow same for Router 1
- 4) Go to settings, In NVRAM save the changes
- 5) ping from pco to PC1

observation:

pc> ping 20.0.0.2

pinging 20.0.0.2 with 32 bytes of data:

Reply from 20.0.0.2 : bytes = 32 time = 4ms TTL = 128
= 18ms
1ms
4ms

ping statistic for 20.0.0.2:

Packets: sent = 4, received = 4, lost = 0(0% loss),

Approximate round trip times in milli-seconds:

Minimum = 1ms, Maximum = 18ms, Average = 6ms.

pc> ping 30.0.0.2

pinging 30.0.0.2 with 32 bytes of data

Reply from 30.0.0.2 : bytes = 32 time = 1ms TTL = 254
5ms
1ms
3ms

8/19/11 *
Ping statistics:

Packets: sent

Approximate

Minimum =

PC > ping 3

Pinging 3

Reply from

bytes

ping statistic

Packets: s

Approximate

Minimum =

ping statistics for 30.0.0.2:

packets: sent=4, received=4, lost=0 (0% loss),

approximate round-trip times in milliseconds:

Minimum=1ms, Maximum=5ms, Average=3ms.

PC>ping 30.0.0.1

pinging 30.0.0.1 with 32 bytes of data:

Reply from 30.0.0.1: bytes=32 time=0ms TTL=255
2ms

0ms

REP⁶

ping statistics for 30.0.0.1:

packets: sent=4, received=4, lost=0 (0% loss),

approximate round-trip time in milliseconds:

Minimum=0ms, Maximum=2ms, Average=0ms.

8/11/11 *

=254

Program 8

LAB WEEK 8

- a) To demonstrate communication between two devices using a wireless LAN

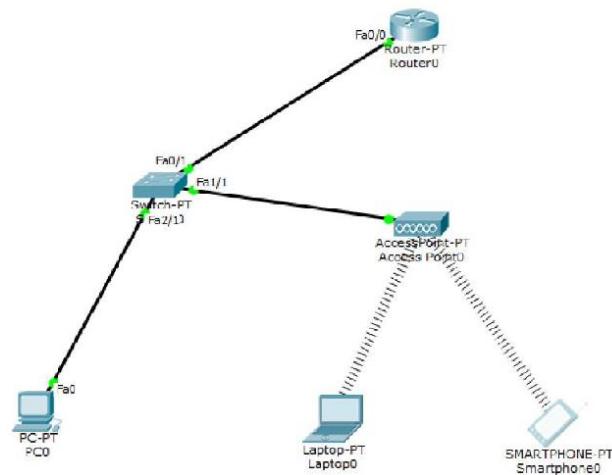


Figure 1: Topology

A screenshot of a Windows Command Prompt window titled "Smartphone0". The window shows the output of a ping command from PC0 to Laptop0. The text in the window is as follows:

```
Packet Tracer: PC Command Line 1.0
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=1ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 3ms, Average = 1ms

PC>|
```

Figure 2: Output

26/11/24

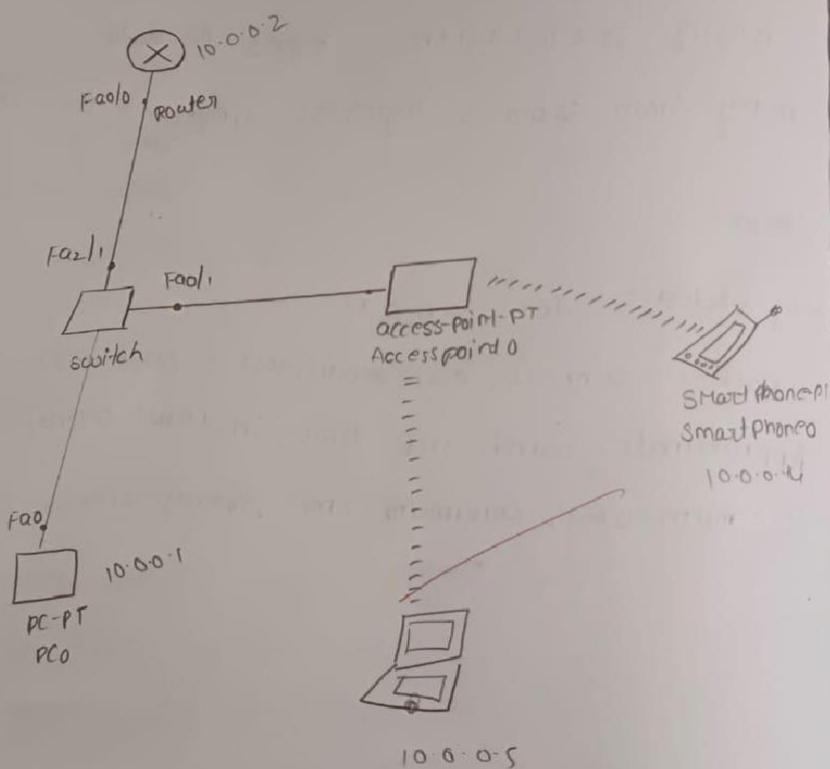
Experiment-9

Communication b/w two

a) Aim: To demonstrate devices using a wireless LAN.

Topo

Topology:



Observation:

- 1) Select the PC, Router, switch and Access-point smartphone and laptop.
- 2) connect through ~~Automatically choose connection type~~ automatically choose connection type.
- 3) Give the configuration for PC and router
PC -> 10.0.0.1 Router 10.0.0.2

u) Go to the o

Port 2 make

Goto Port 1

Authenticati

WPA 2-1

password

v) Go to smartc

Give the

Authentica

Give the

b) Go to to

Give the

perform

But in th

there

Go to

Go to

Switch

and add

then e

Observation

with the

wireless c

connected

u) Go to the access point Go to config

Port 0 make it Auto on.

Go to Port 1 Give the SSID wlan1

Authentication

WPA2-PSK

password is 8u5678.

v) Go to smartphone

Give the SSID wlan1

Authentication WPA2-PSK password 8u5678.

Give the IP address 10.0.0.4

w) Go to laptop

Give the config same give the IP add ress 10.0.0.5.

But in the config wireless 0 will not be there to add that.

Go to physical.

Go to physical device view.

Switch off button drag the wired connection

and add. wireless and on the switch.

Then access point and laptop will be connected.

Observation:

With the help of wireless connection we will be able to ping from PC no different wireless connected devices like the laptop and smartphone.

Program 9

LAB WEEK 9

To create a virtual LAN on top of the physical LAN and enable communication between physical LAN and virtual LAN

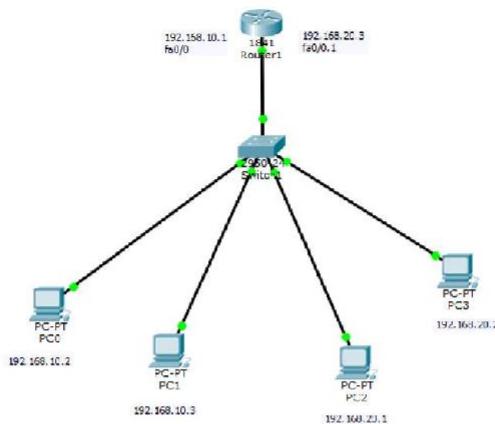


Figure 1: Topology

```
PC> ping 192.168.10.1
Pinging 192.168.10.1 with 32 bytes of data:
Reply from 192.168.10.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.1:
    Packets: Sent = 5, Received = 5, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC> ping 192.168.10.2
Pinging 192.168.10.2 with 32 bytes of data:
Reply from 192.168.10.2: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.2:
    Packets: Sent = 5, Received = 5, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC> ping 192.168.10.3
Pinging 192.168.10.3 with 32 bytes of data:
Reply from 192.168.10.3: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.10.3:
    Packets: Sent = 5, Received = 5, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

PC> ping 192.168.20.1
Pinging 192.168.20.1 with 32 bytes of data:
Reply from 192.168.20.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.20.1:
    Packets: Sent = 5, Received = 5, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

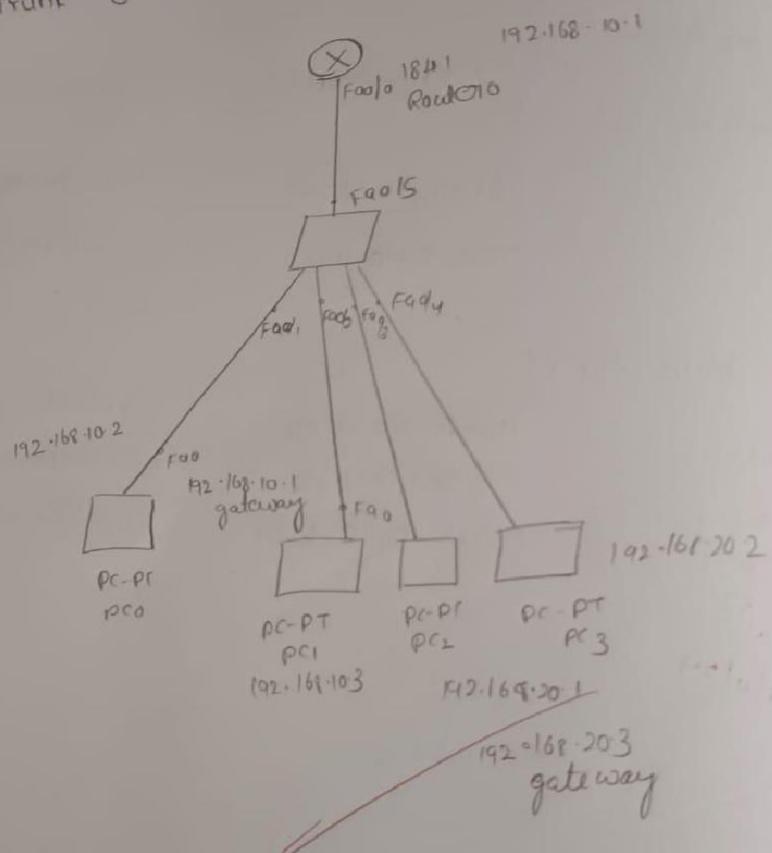
PC> ping 192.168.20.2
Pinging 192.168.20.2 with 32 bytes of data:
Reply from 192.168.20.2: bytes=32 time<1ms TTL=255
```

Figure 2: PC Command Prompt

8/12/24

Aim: To create a virtual LAN on top of the physical LAN and enable communication b/w physical LAN and virtual LAN and enable communication b/w physical LAN and virtual LAN.

Trunk is a interface that passes messages



Configuration:

- 1) select the 4 pc and one switch 2950T and router 1841
- 2) config Router and ipaddress 192.168.10.1 and the selected PC give the IP address 192.168.10.2 and 192.168.10.3 and give the gateway.
- 3) go to switch → VLAN database → VLAN 1 → add
- 4) go to F0/5

Change access
Select VLAN ?
go to Fa0/3
Only sele

- 5) set IP address
- 6) go to VLAN database
- 7) set IP address
- then exit

>> type:
VLAN database
→> LAN
9) enter
type

~~DB~~
31/12/24

(1) again

- 12) type
IP address
no show
exit

(3) ping
Observation
Success
Physical

the physical
and virtual lan
sages

Change access to trunk

Select vlan 20

go to Fa0/3 & Fa0/4

Only select vlan 20

5) set ip address and gateway for PC2 and PC3

6) go to router

enter fastethernet 0/0-1 interface

7) set ip address 192.168.20.3 255.255.255.0

then exit config mode ie config-subif. and config

8) type:

vlan database

→ vlan 29 name Vlan1

9) enter config-subif mode.

Type:

encapsulation dot1q 20

no shutdown

exit

10) again enter interface to fastethernet 0/0-1

11) type encapsulation dot1q 20

ip address 192.168.20.3 255.255.255.0

no shutdown

exit

12) ping

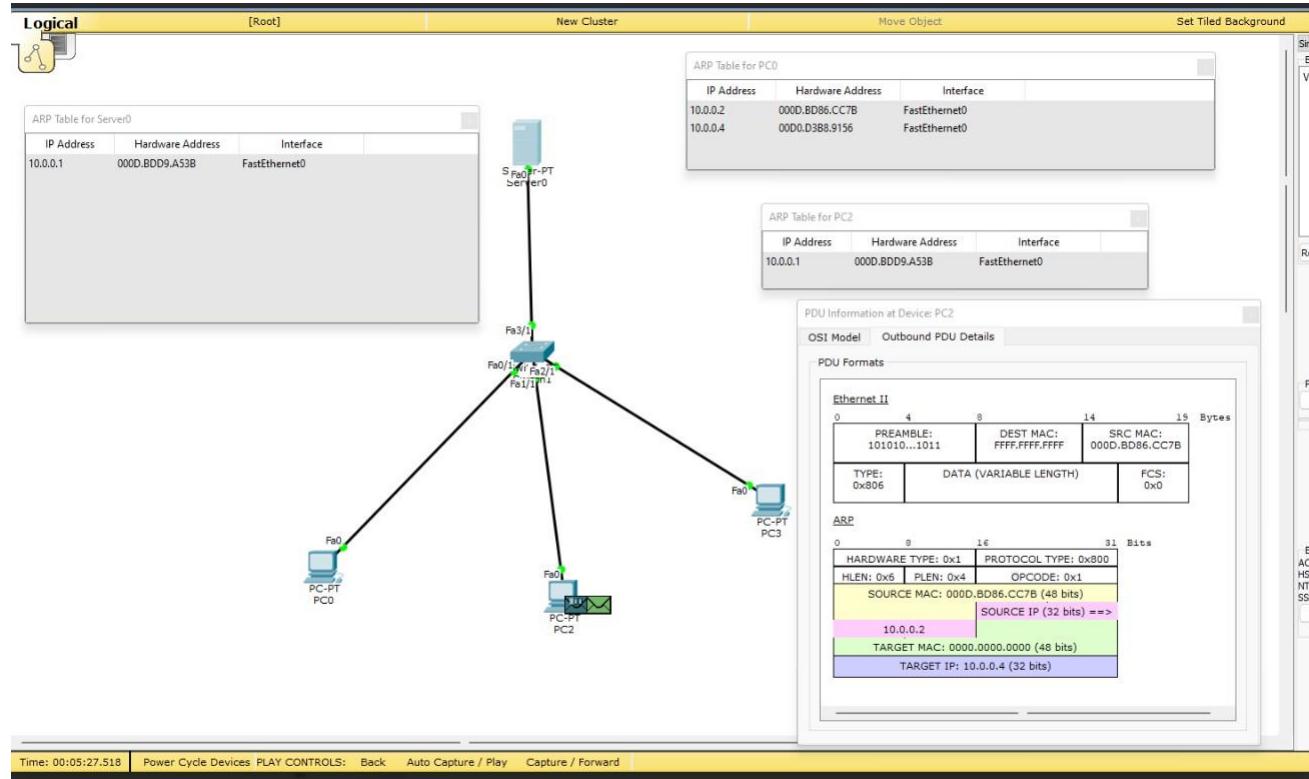
Observation:

Successful pinging within the network and between
physical network and virtual network PCs

Program 10

LAB WEEK 10

To Demonstrate the working of address resolution protocol(ARP) for communication within a LAN

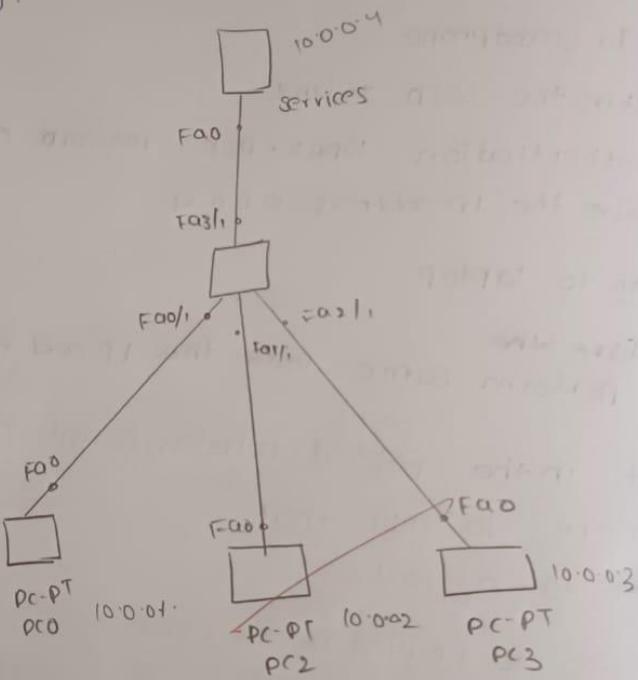


26/11/24.

Experiment - 10

Aims: To demonstrate the working of address resolution protocol (ARP) for communication within a LAN.

Topology:



Observation:
configuration:

- 1) select the 3pc and assign the ip address
- 2) one switch and services.
- 3) Give the simple PDU from PC0 to server and PC2 to Services then check the ARP table.

Observation:

ARP table for server 0.

IP address

10.0.0.1

10.0.0.2

ARP for

IP address

10.0.0.2

10.0.0.4

ARP fla

IP address

10.0.0.1

10.0.0.3

lecta.B

26/11/

solution

IP address

10.0.0.1
10.0.0.2

Hardware address

0001.C9A3.3340
0010.71A0.FA77

Interface
Fastethernet
Fastethernet)

ARP for PC0

IP address
10.0.0.2
10.0.0.4

Hardware address

0010.11A0.FA77
0000.6390.44C7

Interface

fastethernet
Fastethernet)

ARP table for PC1

IP address

10.0.0.1
10.0.0.4

leela.B
26/4/24

Hardware address

0001.C9A3.3340
0000.6390.44C7

Interface

Fastethernet
Fastethernet)

ress

rver

table.

route and topology database are used to make route table

route table is used to store the information about the network
and the path to reach the destination
forwarding, switching, routing
functions are performed by route table

Program 11

17/12/2024

wrote a program for error detecting code using CRC-CCT

```
#include <stdio.h>
#include <stdint.h>
#define CRC-POLY 0x11021
#define INITIAL-CRC 0xFFFF
Unit16 compute-Crc(uchar8 *data, size_t length)
{
    Unit16 CRC = INITIAL-CRC;
    for (size_t i=0; i<length; i++)
    {
        CRC ^= (data[i] << 8);
        for (int j=0; j<8; j++)
        {
            if (CRC & 0x8000)
            {
                CRC = (CRC << 1) ^ CRC-POLY;
            }
            else
            {
                CRC <<= 1;
            }
        }
    }
    return CRC & 0xFFFF;
}
int check-Crc(Unit8 *data, size_t length,
              Unit16 expected-Crc)
{
    Unit16 computed-Crc = compute-Crc(data, length);
}
```

```
return (computed-crc == expected-crc);  
}  
in main()  
unit8-t data[] = "Hello, world";  
size-t received-length = size of (received-data);  
if (check-crc (received-data, received-length), crc)  
{  
    printf ("Data received correctly with no errors.\n");  
}  
else  
{  
    printf ("Error detected in received data!\n");  
}  
return 0;  
}.
```

out put:

Data: Hello, world!

Computed CRC-CITT: 0x6FD1.

~~Data received correctly with no errors.~~

~~BB~~

~~F0101H~~

~~8000~~

Leaky bucket Algorithm.

#include <stdio.h>

int main()

{
int incoming, outgoing, buck-size, n, store=0;
printf("Enter bucket size, outgoing rate and no of

inputs:");
scanf("%d %d %d", &outgoing, &buck-size, &n);

while (n!=0){

printf("Enter the incoming packet size :");

scanf("%d", &incoming);

printf(" Incoming packet size %d \n", incoming);

if (incoming <= (buck-size-store)){

store+=incoming;

printf("dropped %d no of packets in %d, incoming -
(buck-size-store);

printf("Bucket buffer size %d out of %d in %d, stor
buck-size);

store=buck-size;

}

store=store-outgoing;

printf("After outgoing %d bytes left out of %d in
buffer in %d, store %d, buck-size);

n--;

}.

Output:

Enter bu

Enter +

Incom

Bucket

After

frde

Inco

Bucce

After

/

so

Output:

Enter bucket size, outgoing rate and no. of inputs: 5 10 5

Enter the incoming packet size: 3

Incoming packet size 3

Bucket buffer size 3 out of 5

After outgoing 1 bytes left out of 5 in buffer

Enter the incoming packet size: 2

Incoming packet size 2

Bucket buffer size 3 out of 5

After outgoing 1 bytes left out of 5 in buffer.

IR
1/2/1/2/H

Soy

Incoming -

1011, 1010,

and in

program 12

```
In [1]: from socket import *
from threading import Thread

def start_server():
    serverName = "127.0.0.1"
    serverPort = 12000
    serverSocket = socket(AF_INET, SOCK_STREAM)
    serverSocket.bind((serverName, serverPort))
    serverSocket.listen(1)
    print("The server is ready to receive")

    while True:
        connectionSocket, addr = serverSocket.accept()
        print(f"Connection from {addr}")
        sentence = connectionSocket.recv(1024).decode()
        try:
            with open(sentence, "r") as file:
                l = file.read(1024)
                connectionSocket.send(l.encode())
        except FileNotFoundError:
            connectionSocket.send("File not found.".encode())
            connectionSocket.close()

# Run the server in a separate thread
server_thread = Thread(target=start_server, daemon=True)
server_thread.start()
```

The server is ready to receive

```
In [2]: from socket import *

serverName = "127.0.0.1"
serverPort = 12000
clientSocket = socket(AF_INET, SOCK_STREAM)
clientSocket.connect((serverName, serverPort))

# Prompt for the filename
sentence = input("Enter the file name: ")
clientSocket.send(sentence.encode())

# Receive file content or error message
filecontents = clientSocket.recv(1024).decode()
print('From Server:', filecontents)

clientSocket.close()
```

```
Connection from ('127.0.0.1', 63844)
Enter the file name: filename.txt
From Server: Hello
```

22/12/24.
using TCP/IP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.

Output:

The server

Connection

Enter the

From

Client .py.

```
from socket import *
serverName = "127.0.0.1"
serverPort = 12000
clientSocket = socket(AF_INET, SOCK_STREAM)
clientSocket.connect((serverName, serverPort))
sentence = input("Enter file name")
clientSocket.send(sentence.encode())
filecontents = clientSocket.recv(1024).decode()
print(f'From server:', filecontents)
clientSocket.close()
```

Server.py.

```
from socket import *
serverName = "127.0.0.1"
serverPort = 12000
serverSocket = socket(AF_INET, SOCK_STREAM)
serverSocket.bind((serverName, serverPort))
serverSocket.listen(1)
print("The server is ready to receive")
while 1:
    connectionSocket, addr = serverSocket.accept()
    sentence = connectionSocket.recv(1024).decode()
    file = open(sentence, "r")
    l = file.read(1024)
    connectionSocket.send(l.encode())
    file.close()
    connectionSocket.close()
```

rogram to
or to send
sent.

Output:

The server is ready to receive.

Connection from ('127.0.0.1', 63844)

Enter the file name.e.tet

From server:Hello.

accept()
decode()

20/12/24
2. Using UDP sockets, write a client-server program to make client sending the file name and the server to send back the contents of the requested file if present.

Solution:

```
clientUDP.py:  
from socket import *  
serverName = "127.0.0.1"  
serverPort = 12000  
clientSocket = socket(AF_INET, SOCK_DGRAM)  
sentence = input("Enter file name")  
clientSocket.sendto(bytes(sentence, "utf-8"), (serverName, serverPort))  
filecontents, serverAddress = clientSocket.recvfrom(2048)  
print("From server:", filecontents)  
clientSocket.close()
```

server UDP.py:

```
from socket import *  
serverPort = 12000  
serverSocket = socket(AF_INET, SOCK_DGRAM)  
serverSocket.bind(("127.0.0.1", serverPort))  
print("The server is ready to receive")  
while True:  
    sentence, clientAddress = serverSocket.recvfrom(2048)  
    file = open(sentence, "r")  
    l = file.read(2048)  
    serverSocket.sendto(bytes(l, "utf-8"), clientAddress)  
    print("Sent back to client", l)  
    file.close()
```

and put:
Theseve
connection
Enter the
from S

