Dhaka City College

Department of Computer Science and Engineering

Course Name: **Computer Networking Lab**
Course Code: **530222**

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Semester: 6th semester, Part III
Session: 2018-2019

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Signature

LIST OF SESSIONS

Lab 1:

Design and configure a network infrastructure with two networks connected by one CISCO router. Configured static routing for this network

Lab 2:

Design and configure a network infrastructure with two networks connected by two CISCO routers. Configured static routing for this network.

Lab 3:

Design and configure a network infrastructure with four networks connected by two CISCO routers. Configured static routing for this network.

Lab 4:

Design and configure a network infrastructure with two networks connected by two CISCO routers. Configured RIP routing for this network.

Lab 5:

Design two separate networks (CSE & BBA) connected by a CISCO router and also configureDHCP for CSE network.

Lab 6:

Design and configure a network infrastructure of a VLAN using CISCO Router.

Lab 7:

Implementation of DNS server using Packet Tracer.

Lab 8:

Implementation of FTP using Packet Tracer.

Lab 9:

Implementation of SMTP using Packet Tracer.

Lab 10:

Design and configure a WWW with different networks.

Lab 11:

Implementation of a OSPF using Packet Tracer

Date of Submission:

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:01

Experiment Name: Design and configure a network infrastructure with two networks connected by one CISCO router. Configured static routing for this network

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 01

Experiment Name: Design and configure a network infrastructure with two networks connected by one CISCO Router.

Objectives: The objective of this experiment is to design and configure a network infrastructure with two network by using static routing.

Theory: To implement this type of network, there are three device that is needed, such as-

1. Router: Router is an device that is used to route the packet to the indicated destination.

2. Switch: Switch is a computer networking device that connects network segments.

3. End-devices: End devices are initiated to be the sender or receiver.

Design:

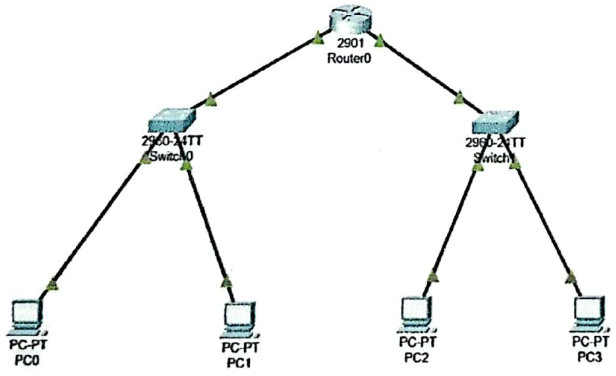

fig 01: Two network connected by one CISCO Router.

Fig 01. shows PC0, PC1 are connected by switch0 and PC2 and PC3 are connected by switch1. By using one CISCO Router they are connected with each other.

Working principal:

1. Setup PC, switch & router according to fig 01.

2. Configure PC2 and PC3 with following IP address and subnet mask.

Host	IP address	Subnet mask
Router0(gig0/1)	192.168.20.1	255.255.255.0
PC2	192.168.20.2	255.255.255.0
PC3	192.168.20.3	255.255.255.0

Table 1.1

3. router0 (0/1) port is assigned by 192.168.20.1 and its internal end devices with its corresponding IP.

Host	IP address	Subnet mask
Router0(gig0/0)	192.168.10.1	255.255.255.0
PC0	192.168.10.2	255.255.255.0
PC1	192.168.10.3	255.255.255.0

Table 1.2

4. Configuring PC0 and PC1 with table 1.2 IP address. and subnet mask.

5. Since, router0(0/0) is assigned by 192.168.10.1 so, the internal devices with the corresponding IP has been used.

6. After configuring all the components, it is ready to transfer data.

Router configuration:

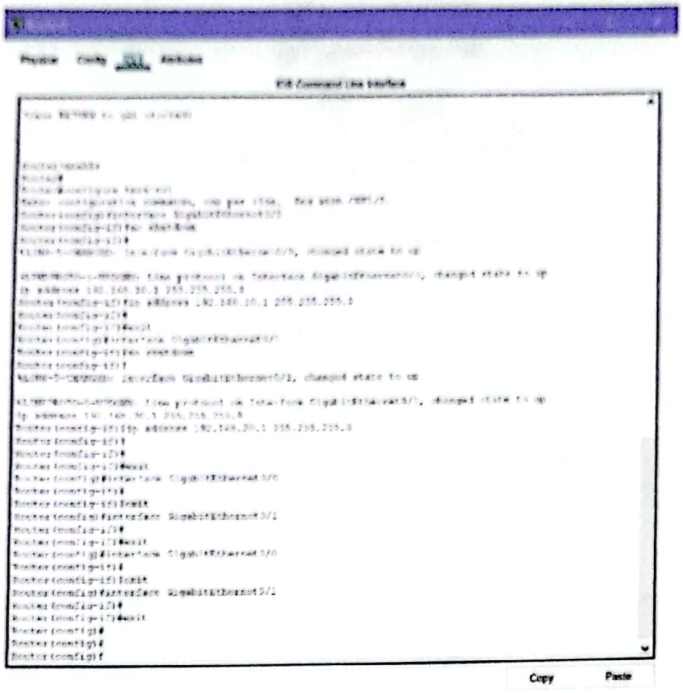

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fig 01.b: Router configuration command.

We can also configured by using command. Fig 01.b shows router configuration using command.

Output:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	ICMP		0.000	N	0	(edit)	(delete)
	Successful	PC2	PC3	ICMP		0.000	N	1	(edit)	(delete)
	Successful	PC1	PC2	ICMP		0.000	N	2	(edit)	(delete)
	Successful	PC1	PC3	ICMP		0.000	N	3	(edit)	(delete)

fig 01.a: Output

Fig 01.a shows the successful transmission of data from source to destination.

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Course Name: **Computer Networking Lab**

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Experiment No:02

Experiment Name: Design and configure a network infrastructure with two networks connected by two CISCO routers. Configured static routing for this network

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 02

Experiment Name: Design and configure a network infrastructure with two networks connected by two CISO router.

Objective: The objective of this experiment is to design two network connected by two router using static routing.

Theory: Three components are needed to implement this designed-

① Router: Router is a networking design that is used to route packets.

② Switch: Switch is an device that connets network segments.

③ End device: End devices are initiated to be the sender or receiver.

Design:

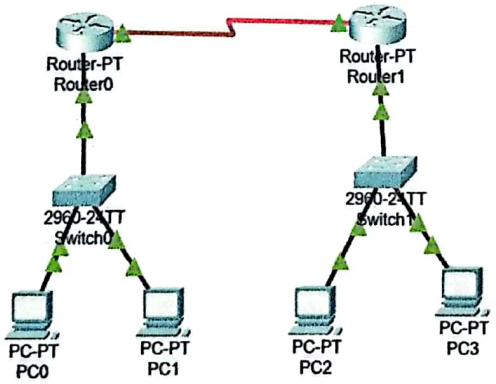

fig 2.a: Two network connected by two CISCO router.

PC0, PC1 are connected with switch0 and PC2 & PC3 are connected with switch1. Switc0 and switch1 are connected by router0 and router1.

Working principal:

① Configuring router0 and router1 with the

Host	IP address	Subnet mask
Router0(0/0)	192.168.1.1	255.255.255.0
Router0 se2/0	11.0.0.1	255.0.0.0
Router1(0/00	192.168.2.2	255.255.255.0
Router1 se2/0	11.0.0.2	255.0.0.0

Table 2.1

following IP address & subnet mask. Router0 & router1 are connected by serial 2/0 with the IP 11.0.0.1 and 11.0.0.2.

Host	IP address	Subnet mask	Default gateway
PC0	192.168.1.2	255.255.255.0	192.168.1.1
PC1	192.168.1.3	255.255.255.0	192.168.1.1
PC2	192.168.2.2	255.255.255.0	192.168.2.1
PC3	192.168.2.3	255.255.255.0	192.168.2.1

Table 2.2

② Configuring the PC0, PC1 with the router0(0/0) corresponding IPs.

③ Configuring the PC2, PC3 with the router1(0/0) corresponding IPs.

④ After assigning IP address the design are ready to transmit data.

Output:

By using, ping (IP address- destination) command it is easy to transmit data from source to destination. Fig 9.b. shows transmit data from pc 1 to pc2 using ping command.

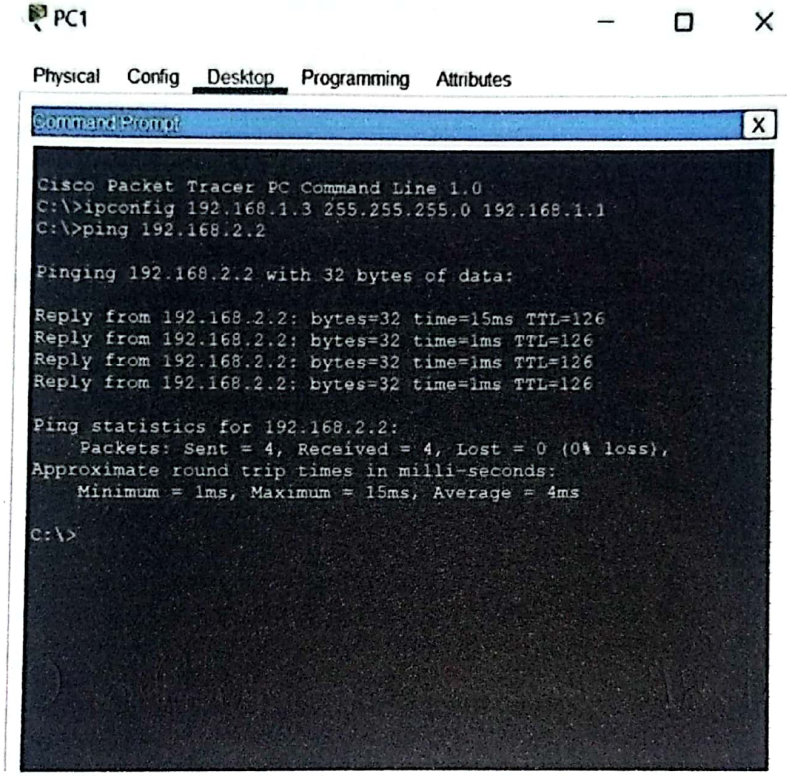

Fig 9.b: Transferring data from PC1 to PC2.

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Course Name: **Computer Networking Lab**

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Experiment No:03

Experiment Name: Design and configure a network infrastructure with four networks connected by two CISCO routers. Configured static routing for this network.

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 03

Experiment Name: Design and configure a network infrastructured with four networks connected by two cisco router.

Objectives: The objective of this experiment is to design four network connected by two cisco router using static routing.

Theory: To implement four network, three components are used-

① Router: Router is a networking device that is used to route packets.

② Switch: Switch is an device that connects network segments.

③ End-devices: End devices are initiated to be the sender and receiver.

Design:

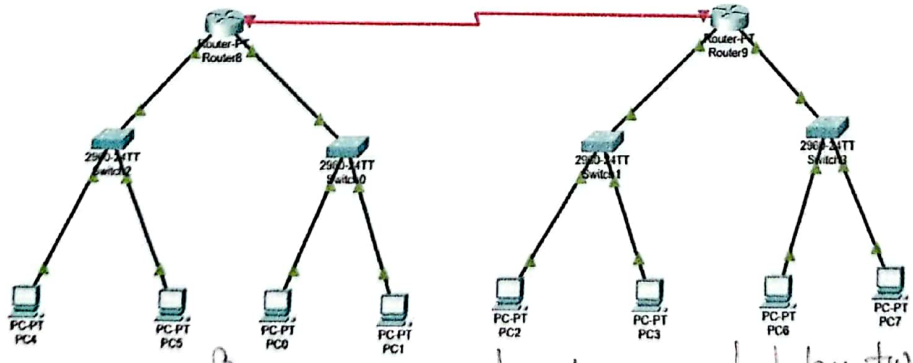

fig 3.3: Four network connected by two cisco router.

All the end devices PC0-PC7 are dually connected with switch-0 to switch-3. Switch0 and switch 2 are connected with router8 & switch1 & switch 3 are connected with router9.

Working principal:

① Configuring Router 8(0/0), Router 8(0/1) and

Host	IP Address	Subnet Mask
Router8(0/0)	192.168.10.1	255.255.255.0
Router8(0/1)	192.168.20.1	255.255.255.0
Router-se(2/0)	192.168.30.1	255.255.255.0
PC0	192.168.10.2	255.255.255.0
PC1	192.168.10.3	255.255.255.0
PC4	192.168.20.2	255.255.255.0
PC5	192.168.20.3	255.255.255.0

Table 3.1

serial (2/0) with the following IP address and subnet mask PC0, PC1, PC4 & PC5 are assign with the following IP connected with Router 8.

Host	IP Address	Subnet Mask
Router9(0/0)	192.168.40.1	255.255.255.0
Router9(0/1)	192.168.50.1	255.255.255.0
PC2	192.168.40.2	255.255.255.0
PC3	192.168.40.3	255.255.255.0
PC6	192.168.50.2	255.255.255.0
PC7	192.168.50.3	255.255.255.0

Table 3.2

② Configuring Router 9(0/0), Router 9 (0/1) with the following IP address and subnet mask. PC2, PC3, PC6 and PC7 are assign with the IP connected with Router 9.

③ After assigning IP address, the design is ready to transmit data.

Router Configuration:

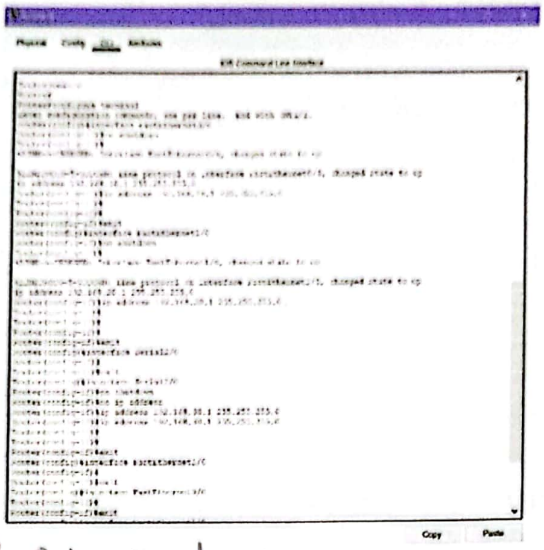

fig 3.b : Router 8

fig 3.b shows router configuration using command.

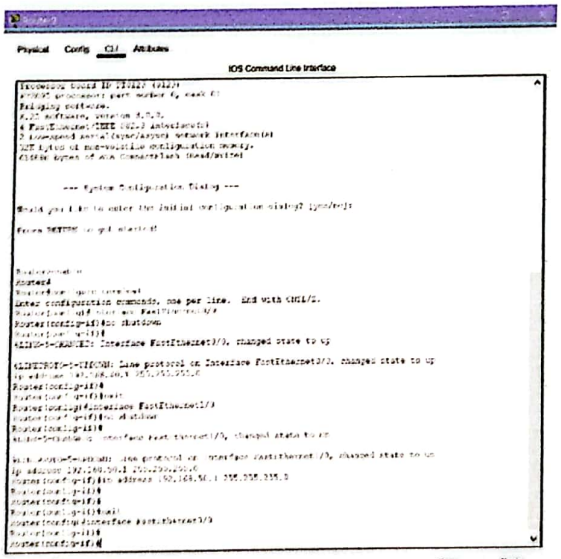

fig 3.c : Router 9

fig 3.c. shows router configuration using command.

Output:

Fig 3.d shows the successful transmission of data from PC5 to PC0, from PC5 to PC1 and from PC2 to PC6.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
	Successful	PC5	PC0	ICMP		0.000	N	1	(edit)		(delete)
	Successful	PC5	PC1	ICMP		0.000	N	2	(edit)		(delete)
	Successful	PC2	PC6	ICMP		0.000	N	3	(edit)		(delete)

Fig 3.d: Output

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Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

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Experiment No:04

Experiment Name: Design and configure a network infrastructure with two networks connected by two CISCO router. Configured RIP routing for this network

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 04

Experiment Name: Design and configure a network infra-structure with two networks connected by two cisco router. Configure RIP routing for this network.

Objectives: The objectives of this experiment is to design two network connected by two CISCO router using RIP routing.

Theory: To implement this design router, switch and end-devices are needed. Routing information protocol (RIP) is a dynamic routing protocol that uses hop count as a routing metric to find the best path between the source and the destination network.

Design:

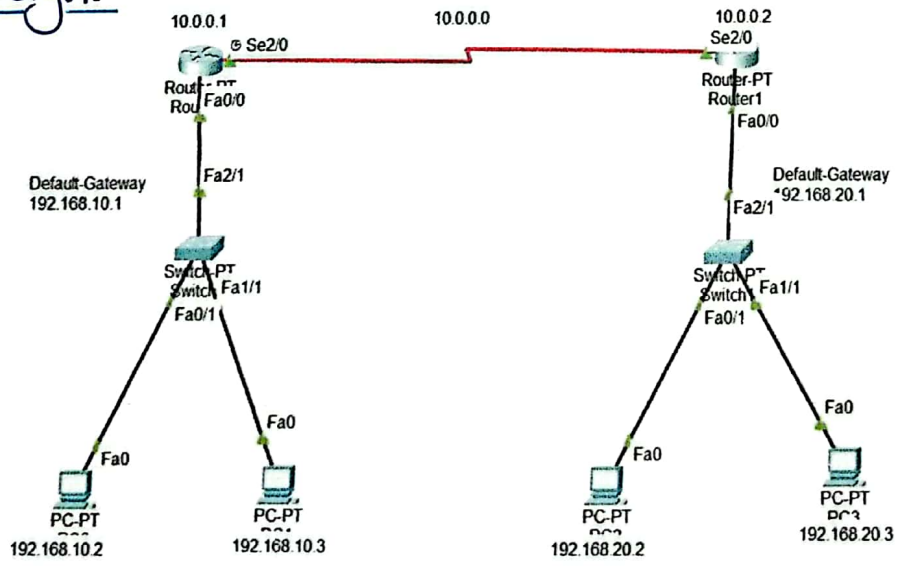

fig 4.a: Two network connected by two cisco router using RIP

PC0 and PC1 are connected switch0 and PC2 and PC3 are connected to switch1. They are sequentialy connected by router0 and router1.

Working principal:

① Configuration of PC0, PC1, PC2 & PC3 with the following IP address & subnet mask.

Host	IP Address	Subnet Mask
PC0	192.168.10.2	255.255.255.0
PC1	192.168.10.3	255.255.255.0
PC2	192.168.20.2	255.255.255.0
PC3	192.168.20.3	255.255.255.0

Table 4.1

Host	IP Address	Subnet Mask
Router0	192.168.10.1	255.255.255.0
	10.0.0.1	255.0.0.0
Router1	192.168.20.1	255.255.255.0
	10.0.0.2	255.0.0.0

Table 4.2

② Router0 (0/0) is assign with 192.168.10.1 & se2/0 with 10.0.0.1

③ Router1 (0/0) is assign with 192.168.20.1 & se2/0 with 10.0.0.2.

④ After assigning IP, the design is ready to transmit data.

Output:

From the following fig 4.b. ping command is used to transmit data from PC0 to PC2.

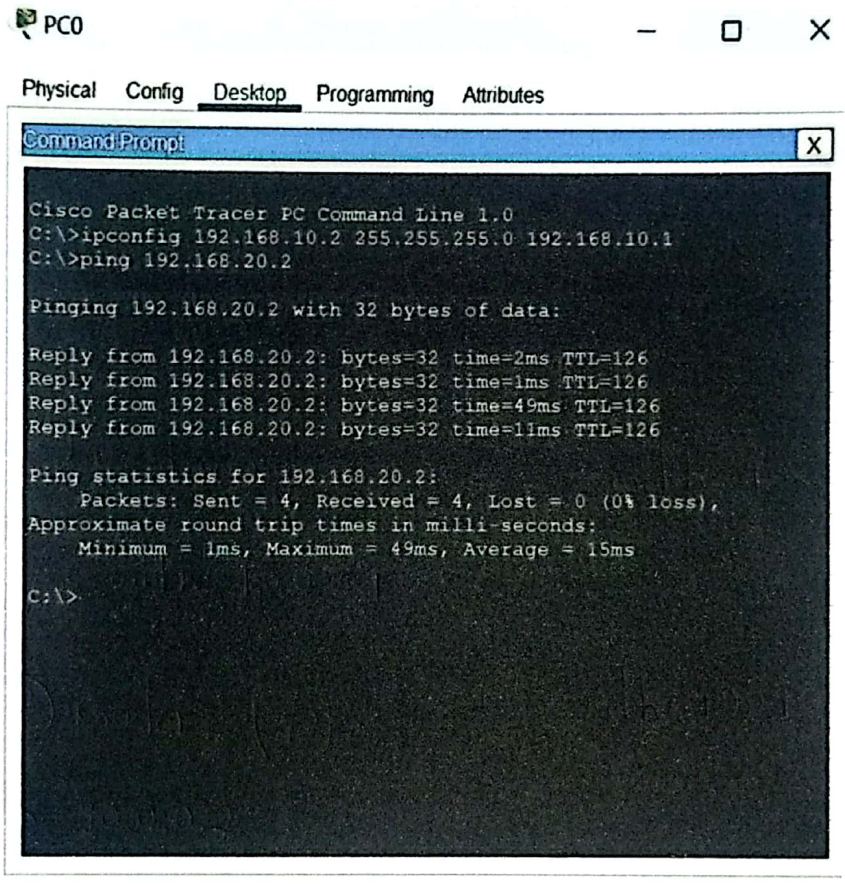

fig 4.b: Transmission of data from PC0 to PC2.

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Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

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Experiment No:05

Experiment Name: Design two separate network (CSE & BBA) connected them by a CISCO router and also configure DHCP for CSE network

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 05

Experiment Name: Design two seperate network (CSE & BBA) connected them by a Cisco router and also configure DHCP for CSE network.

Objectives: The objectives of this experiment to design two network connected by one Cisco router and one network has used DHCP.

Theory: A DHCP (Dynamic Host configuration protocol) is a network server that automatically provides and assign IP address, default gateway and other network parameters to client devices. CSE used an DHCP server for the network implementation.

Design:

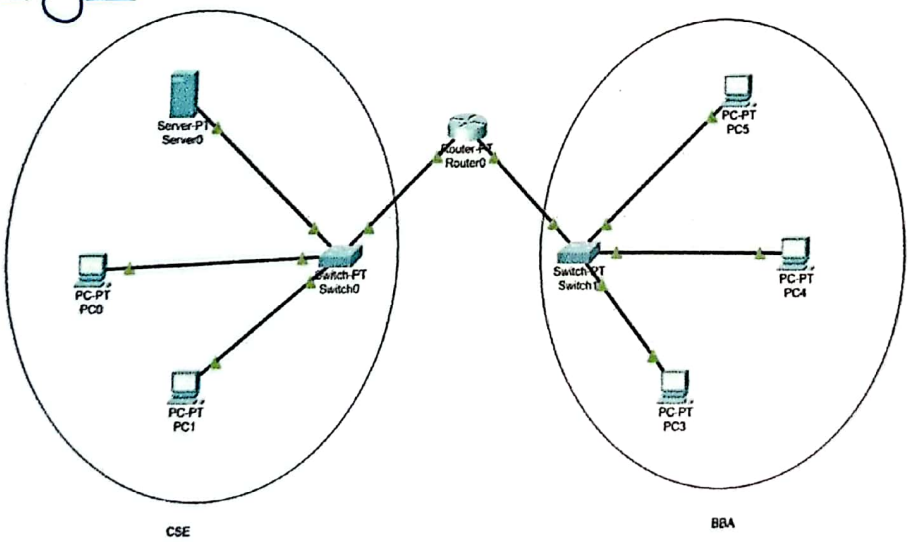

fig 5.a: Two network connected by one Cisco router.

PC0, PC1 & server 0 (DHCP) are connected by switch 0 to Router0(0/0). PC3, PC4, PC5 are connected by switch 1 to Router0(0/1).

Working principal:

① Configuring Router0(0/0) and Server0 with the

Host	IP address	Subnet Mask
Router0(0/0)	192.168.1.254	255.255.255.0
Server0	192.168.1.100	255.255.255.0

Table 5.1

following IP address and subnet mask.

② Configuring Router0(0/1) and PC2, PC3 with the following IP address and subnet mask.

Host	IP address	Subnet Mask
Router0(0/1)	192.168.2.254	255.255.255.0
PC2	192.168.2.1	255.255.255.0
PC3	192.168.2.2	255.255.255.0

Table 5.2

③ Server0 configuration: Since, CSE used a DHCP server, it need to be configured. Enter the service DHCP. on the service. Pool name will be replace by DHCP. Default gateway is the Router0 (0/0) IP address.

Then add the service.

fig 5.b. shows the DHCP server configuration. After that,

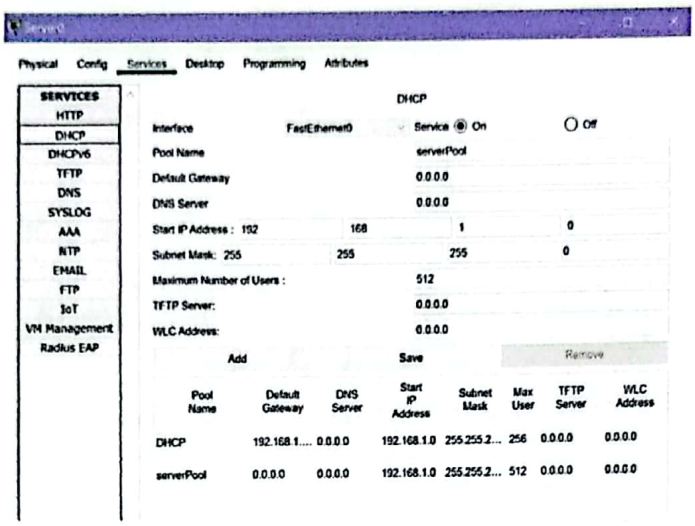

fig 5.b: DHCP server.

Go to PC0 & PC1, Ip config, then select DHCP. It'll automatically assign IP to the PC.

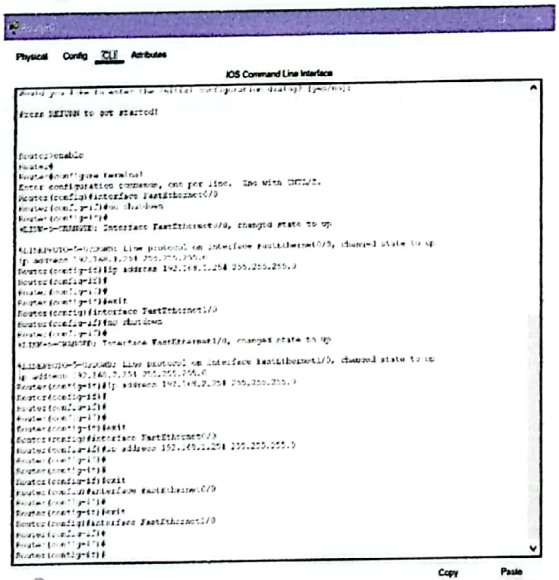

fig 5.c: Router configuration.

All the command can be given to the routers according to the fig 5.c.

Output:

Within the network, all the PCs are available to transmit data.

CSE used DHCP and the PCs of BBA are assign with static routing. Since, they are connected with router0, they can transmit data.

Fig 5.d shows the successful transmission of data from PC0 to PC1, from PC1 to router0, from PC3 to router0.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
	Successful	PC0	PC1	ICMP		0.000	N	2	(edit)		(delete)
	Successful	PC1	Router0	ICMP		0.000	N	3	(edit)		(delete)
	Successful	PC3	Router0	ICMP		0.000	N	4	(edit)		(delete)

Fig 5.d: Transmission of data

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:06

Experiment Name: Design and configure a network infrastructure of a VLAN using CISCO Router.

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 06

Experiment Name: Design and configure a network infrastructure of a VLAN using CISCO switch

Objectives: The objective of this experiment is to design a network structure of a VLAN.

Theory: A virtual local area network is a logical grouping of network users and resources connected to administratively defined ports on a switch.

Design: To implement this practical, the following network topology is required to configured using the VLAN command.

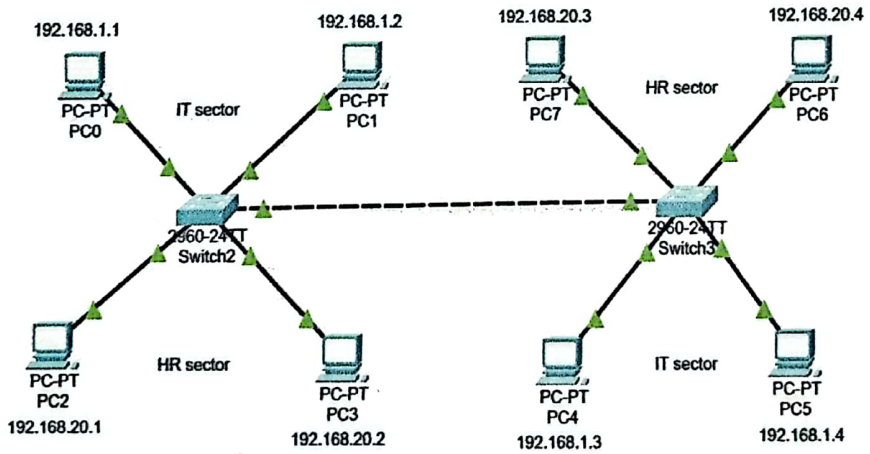

fig 06a: VLAN design.

PC0, PC1, PC2 and PC3 are connected with switch2. PC4, PC5, PC6 and PC7 are connected with switch3. Switch2 and switch3 are connected by copper-cross over cable.

Procedure:

① Configuring PC0, PC1, PC4 and PC5 with the following

Host	IP address	Subnet mask
PC0	192.168.1.1	255.255.255.0
PC1	192.168.1.2	255.255.255.0
PC4	192.168.1.3	255.255.255.0
PC5	192.168.1.4	255.255.255.0

Table 6.1

IP address and subnet mask. They are the part of IT sector and they communicate without any interruption.

② Configuring PC2, PC3, PC6 and PC7 with the following IP address and subnet mask.

Host	IP address	Subnet Mask
PC2	192.168.20.1	255.255.255.0
PC3	192.168.20.2	255.255.255.0
PC6	192.168.20.3	255.255.255.0
PC7	192.168.20.4	255.255.255.0

Table 6.2

They are the part of HR sector and they can communicate without any interruption.

③ IT and HR can transmit data within the network, they cannot transmit data to each other.

④ Switch Configuration:

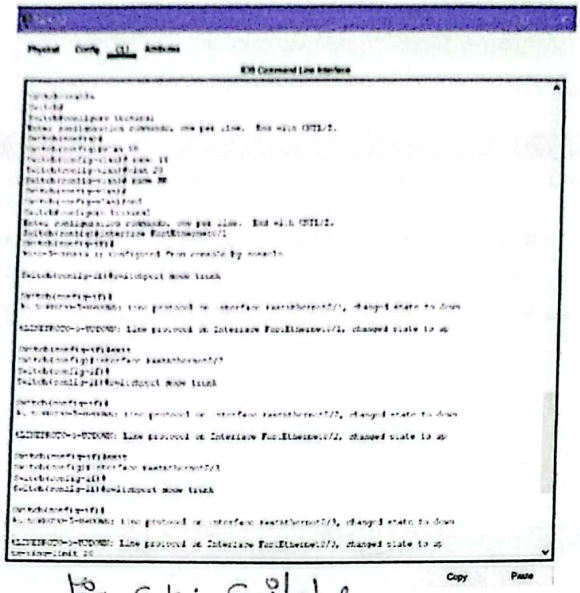

Fig 6.b: Switch2

Switch2 is configured with the command Line Interface. VLAN number IT-10, HR-20, Fastethernet (0/1-09) will be access and 10,10.

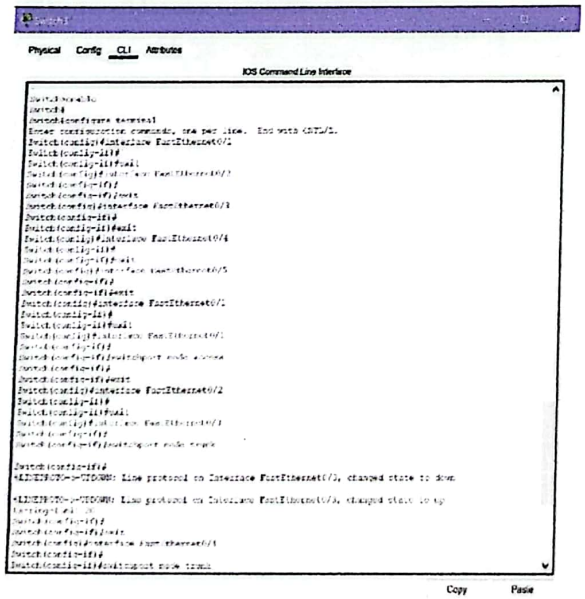

fig 6.c: Switch3

Switch3 is configured with the command line Interface. Fastenthernet (0/5) will be trunk.

Output:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
	Successful	PC2	PC7	ICMP		0.000	N	0	(edit)		(delete)
	Successful	PC0	PC4	ICMP		0.000	N	1	(edit)		(delete)
	Successful	PC3	PC2	ICMP		0.000	N	2	(edit)		(delete)
	Successful	PC4	PC5	ICMP		0.000	N	3	(edit)		(delete)

fig 6.d: Successful output

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete	
	Failed	PC3	PC0	ICMP		0.000	N	4	(edit)		(delete)
	Failed	PC3	PC4	ICMP		0.000	N	5	(edit)		(delete)
	Failed	PC5	PC6	ICMP		0.000	N	6	(edit)		(delete)

fig 6.e: Failed output

fig 6.d. shows the successful transmission of data within the same network.

fig 6.e. shows the transmission of data within different network is not possible.

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:07

Experiment Name: Implementation of DNS server using Packet Tracer.

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 07

Experiment Name: Implementation of DNS server using Packet tracer.

Objectives: The objective of this experiment is to implement DNS server.

Theory: A domain name system server is a piece of software that keeps track of domain name and IP address.

Design: To implement this experiment the following topology design is needed to configure using CISCO packet tracer.

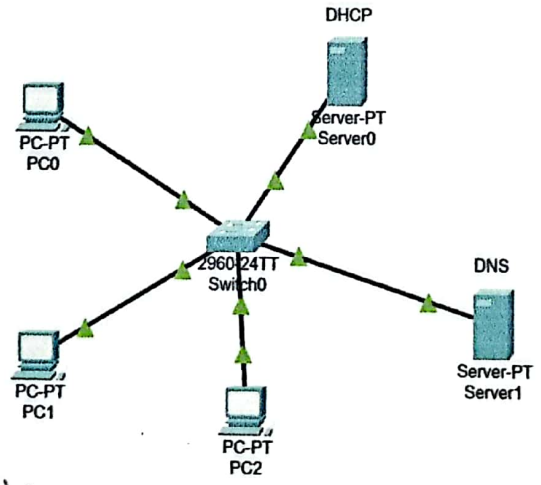

Fig 7.a: DNS server

Fig 7.a. shows how all the components are connected to implement of DNS server.

Procedure:

① Server0 is configure with the following table 7.1.

Host	IP address	Subnet Mask	Default Gateway	DNS server
Server0	192.168.1.1	255.255.255.0	192.168.1.1	192.168.1.2
Server1	192.168.1.2	255.255.255.0	192.168.1.1	192.168.1.2

Table 7.1

② Server1 is configure with the table 7.1.

③ Go to the service of server1, name drop such as www.dhakacity.com, assign IP as 192.168.1.1 then add to the service.

④ Again, select the service pick any file and the

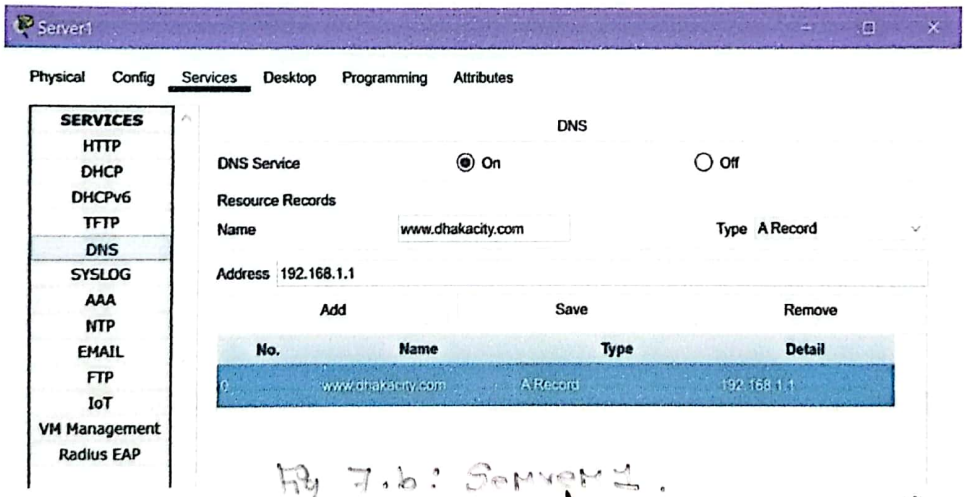

Fig 7.6: Server1.

edit the file with html or CSS or simply write any message then save it.

⑤ After saving the html file, open Server0. select desktop and go to web browser.

Write the required URL and click go. It will show the file that is already written on the server1(DNS). So, it is easily accessed.

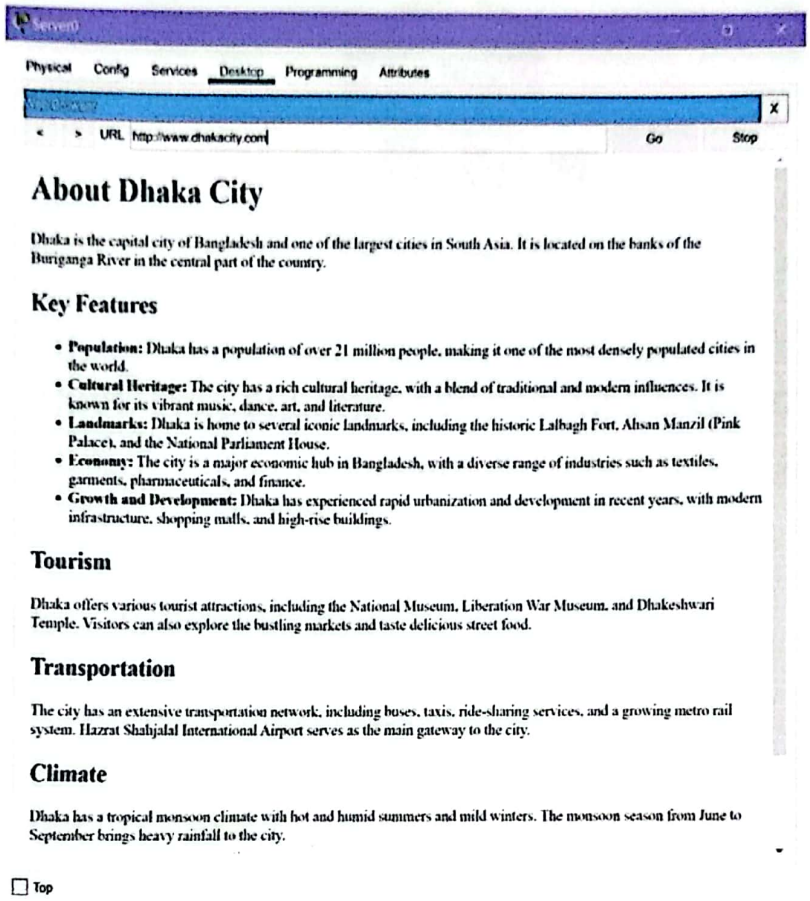

Fig 7.c: Server0.

Output:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC2	ICMP		0.000	N	0	(edit)	
	Successful	PC1	Server0	ICMP		0.000	N	1	(edit)	
	Successful	PC1	Server1	ICMP		0.000	N	2	(edit)	

Fig 7.d: Successful transmission.

Fig 7.d. shows the successful transmission.

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:08

Experiment Name: Implementation of FTP using Packet Tracer

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 08

Experiment Name: Implementation of FTP using packet tracer.

Objectives: The objective of this experiment is to implement of FTP.

Theory: FTP (File transfer protocol) is an internet protocol that is used for transferring files between client and server over the internet or computer network.

FTP server enables the functionality of transferring files between server and client.

Design: To implement this practical, the following topology design is required to implement.

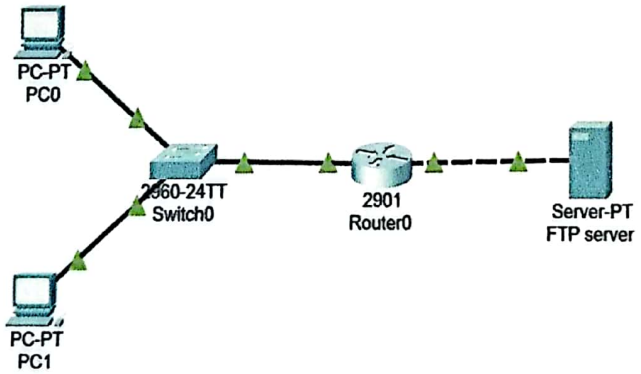

Fig 8.a: FTP server.

Fig 8.a. shows the design of constructing a FTP server.

Procedure:

① PC0, PC1 and Server0 is configure with the following IP address and subnet mask.

Host	IP address	Default gateway	Subnet mask
PC0	192.168.10.2	192.168.10.1	255.255.255.0
PC1	192.168.10.3	192.168.10.2	255.255.255.0
Server0	10.1.1.2	10.1.1.1	255.0.0.0

Table 8.1

② Open Server go to config → select → display name → FTP server.

③ Go to service → username → CISCO2023
password → 12345, then add.

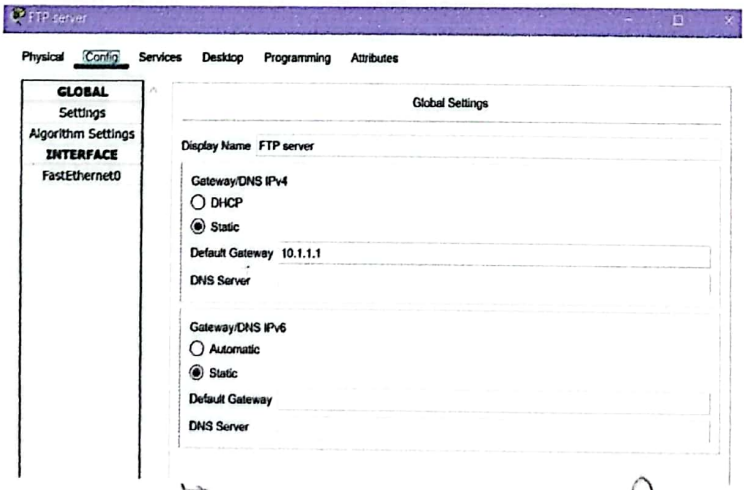

Fig 8.6: FTP Server configure.

③ After configuring Server Go to PC1. Go to Desktop → text editor → write an text → have to save with an name ins.txt.

④ PC1 has to used command prompt to upload the text file show on fig 8.c.

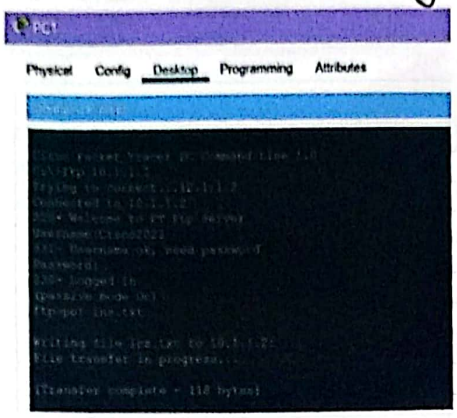

Fig 8.c: PC1

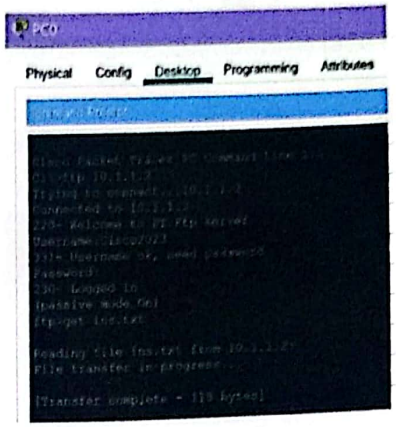

Fig 8.d: PC0

⑤ PC0 has to used command prompt to download the text file show on fig 8.d.

Output:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC1	ICMP		0.000	N	0	(edit)	
	Successful	FTP s...	PC1	ICMP		0.000	N	1	(edit)	
	Successful	PC1	Router0	ICMP		0.000	N	2	(edit)	

fig 8.e: Successful transmission of data

Fig 8.e. shows the successful transmission of data from PC0 to PC1, from FTP server to PC1.

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:09

Experiment Name: Implementation of SMTP using Packet Tracer.

Submitted To: **Nudar Mawla**
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 09

Experiment Name: Implementation of SMTP using Packet Tracer.

Objectives: The objectives of this experiment is to implementation of SMTP.

Theory: A simple mail transfer protocol server is the application and hardware that sends email message. It acts as a 'middleman' between the sender and receiver, of emails.

Design: To implementation of this practical, the following design topology is required to configure.

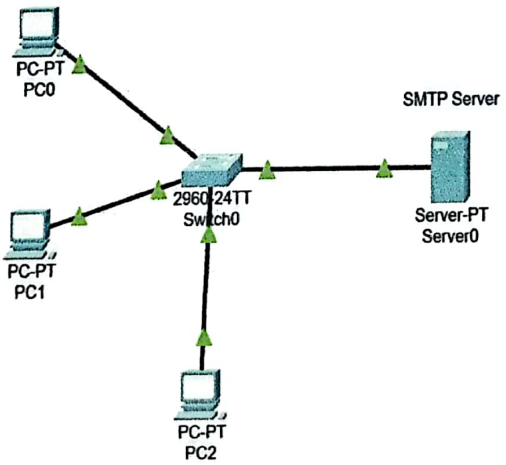

Fig 9.a: SMTP Server.

Fig 9.a. shows the design topology of FTP server.

Procedure:

① First, configure PC0, PC1, PC2 and Server0 with the following IP address and gateway.

Host	IP address	Default gateway	Subnet Mask
PC0	192.168.10.4	192.168.10.1	255.255.255.0
PC1	192.168.10.3	192.168.10.1	255.255.255.0
PC2	192.168.10.2	192.168.10.1	255.255.255.0
Server0	192.168.10.1		255.255.255.0

Table 9.1

② Then go to, Server0 and click on services. Select SMTP, on the service.

③ Enter an domain name such as- withrm.com the click set.

④ username and password need to be add to the server.

⑤ Here, we takes user1, user2 and user3. It can be increase or decrease.

⑥ Configure the Server0 according to the fig 9.b.

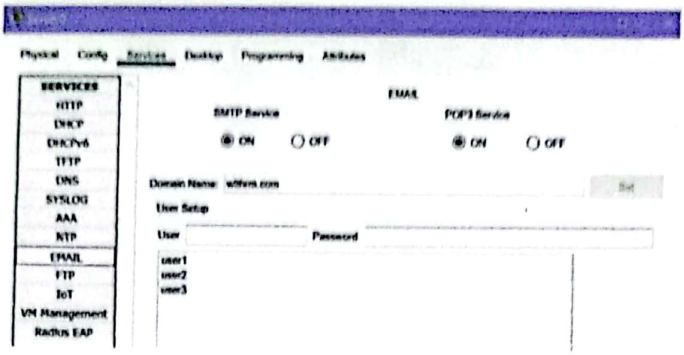

Fig 9.b: Server0 configuration.

(7) Open PC0, enter user name as user1. We have to enter an email address as user1@withrm.com

Fig 9.c: PC0 email.

(8) Server information is the IP of Server0.

(9) Login information → user name → user1 and then user1 have to enter the required password and click save.

(10) The other PC1 and PC2 are also follow the steps of PC0 to configure.

Output:

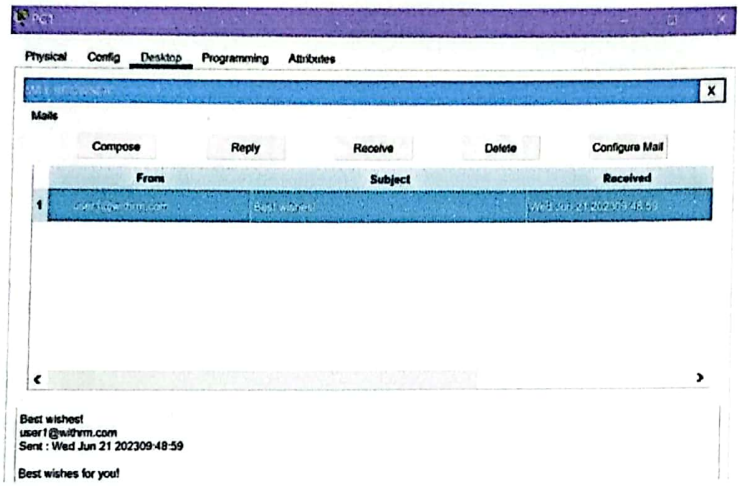

Fig 9.d: PC1 receive email.

User1(PC0) sends an email to user2(PC1). PC1 successfully received the mail from PC0.

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:10

Experiment Name: Design and configure a WWW with different network.

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 10

Experiment Name: Design and configure a WWW with a different network.

Objectives: The objectives of this experiment is to design and configure a WWW.

Theory: The world wide web - also known as the web or W3 - refers to all the public website or pages that users can access on their local computers and other devices through the internet.

Design: To implement this practical, the following design topology is required configure.

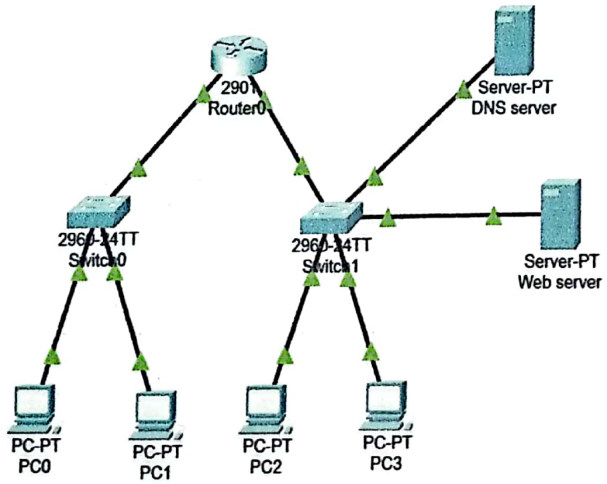

fig 10.a: Web server design.

Fig 10.a. shows the components connected with each other to construct to design topology.

Procedure:

① All PC, servers and router are configure with the

Host	IP address	Subnet Mask	Default gateway
PC0	192.168.10.2	255.255.255.0	192.168.10.1
PC1	182.168.10.3	255.255.255.0	192.168.10.1
PC2	192.168.20.4	255.255.255.0	192.168.20.1
PC3	192.168.20.5	255.255.255.0	192.168.20.1
DNS server	192.168.20.2	255.255.255.0	192.168.20.1
Web server	192.168.20.3	255.255.255.0	192.168.20.1
Router0(0/0)	192.168.10.1	255.255.255.0	
Router0(0/1)	192.168.20.1	255.255.255.0	

Table 10.1

following tables IP address, subnet mast and default gateway.

② Open Server-0, go to the configure then edit the display name as DNS Server.

Follow fig 10.b for this process. and add a name as www.localhost.com

③ Open Server1, go to the configure pannel then edit the display name as web Server.

Click on the HTTP, pick any file then edit the file and save.

Follow fig 10.c, for this process.

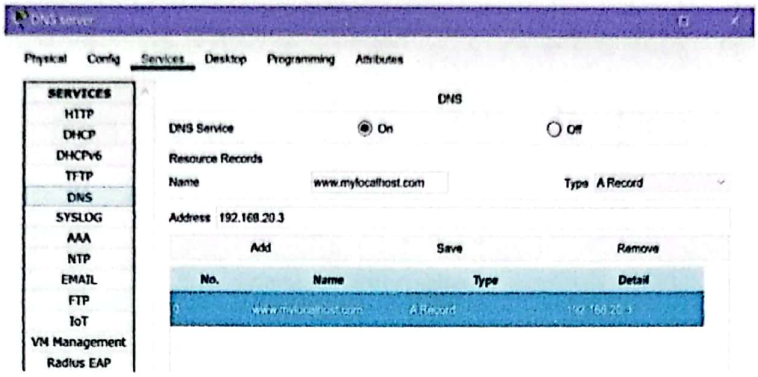

Fig 10.b: Server0

Fig 10.b. shows the step of 2, to configure the DNS server.

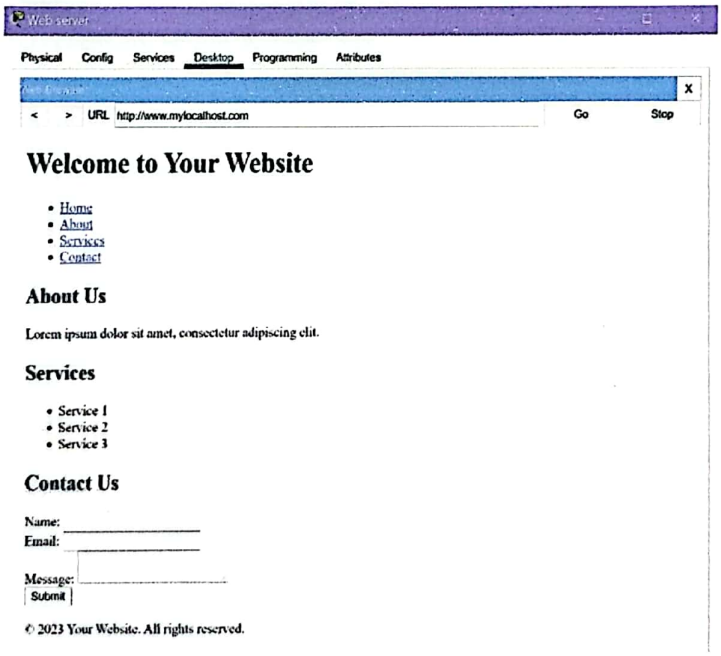

Fig 10.c: Server1

Fig 10.c shows the step-3 to configure the output of the by using www.localhost.com.

Output:

Fig 10.d shows the successful transmission from PC0 to PC2, from PC1 to PC3, from router0 to PC0.

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC2	ICMP		0.000	N	0	(edit)	
	Successful	PC1	PC3	ICMP		0.000	N	1	(edit)	
	Successful	Router0	PC0	ICMP		0.000	N	2	(edit)	

Fig 10.d : Output

Dhaka City College

Dept. Of Computer Science And Engineering

Course Name: **Computer Networking Lab**

Course Code: **530222**

Experiment No:11

Experiment Name: Implementation of an OSPF using Packet Tracer.

Submitted To:

Nudar Mawla
Lecturer
Dept. of CSE

Submitted By:

Name: **Anindita Koiri Prapte**
NU Roll:**210315**
NU Reg: **18502002989**
Section: A
Session: 2018-2019

Signature

Experiment No: 11

Experiment Name: Implementation of an OSPF using packet tracer.

Objectives: The objective of this experiment is to implementation of an OSPF.

Theory: Open shortest path first (OSPF) is a link-state routing protocol that is used to find the best path between the source and the destination routers using its own shortest path first. It is a network layer protocol which works on protocol number 89 and uses AD value 110.

Design: To implementation this experiment the

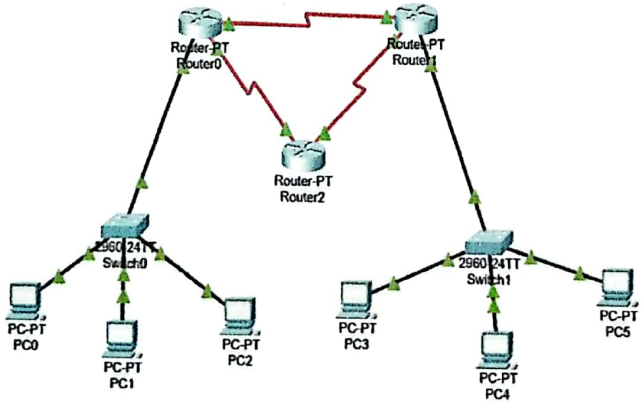

Fig 11.a : OSPF

following design topology is required to implement of an open shortest path first protocol.

Procedure:

① Configure all PC, router with the following

Host	IP Address	Subnet Mask	Default gateway
PC0	192.168.10.2	255.255.255.0	192.168.10.1
PC1	192.168.10.3	255.255.255.0	192.168.10.1
PC2	192.168.10.4	255.255.255.0	192.168.10.1
PC3	192.168.20.2	255.255.255.0	192.168.20.1
PC4	192.168.20.3	255.255.255.0	192.168.20.1
PC5	192.168.20.4	255.255.255.0	192.168.20.1
router0(0/0)	192.168.10.1	255.255.255.0	
Router0 se2/0	10.0.0.1	255.0.0.0	
Router0 se3/0	20.0.0.1	255.0.0.0	
Router2 se2/0	192.168.20.1	255.255.255.0	
Router1 se2/0	20.0.0.1	255.0.0.0	
Router1 se3/0	30.0.0.1	255.0.0.0	
Router2 se2/0	10.0.0.1	255.0.0.0	
Router2 se3/0	20.0.0.1	255.0.0.0	

Table 11.1

IP address, subnet mask and default gateway.

② Then, each router separately needed to be configure using CLI.

③ Fig 11.b, 11.c and 11.d shows the CLI to configure the router0, router1 and router2.

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#
Router(config-if)#exit
Router(config)#router ospf 1
Router(config-router)#network 192.168.10.1 0.0.0.255 area 0
Router(config-router)#network 10.0.0.1 0.255.255.255 area 0
Router(config-router)#network 30.0.0.1 0.255.255.255 area 0
Router(config-router)#exit
Router(config)#
```

Fig 11.b: Router0

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router ospf 1
Router(config-router)#network 192.168.20.1 0.0.0.255 area 0
Router(config-router)#network 20.0.0.1 0.255.255.255 area 0
Router(config-router)#ne
00:12:46: %OSPF-5-ADJCHG: Process 1, Nbr 20.0.0.1 on Serial2/0 from LOADING to FULL, Loading Done
^
% Incomplete command.
Router(config-router)#network 30.0.0.1 0.255.255.255 area 0
Router(config-router)#exit
Router(config)#
00:13:10: %OSPF-5-ADJCHG: Process 1, Nbr 192.168.10.1 on Serial3/0 from LOADING to FULL, Loading Done
```

Fig 11.c: Router 1

```
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial2/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Serial3/0
Router(config-if)#
Router(config-if)#exit
Router(config)#router ospf 2
Router(config-router)#network 10.0.0.1 0.255.255.255 area 0
Router(config-router)#network
00:1d:52: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.10.1 on Serial2/0 from LOADING to FULL, Loading Done

% Incomplete command.
Router(config-router)#network 20.0.0.1 0.255.255.255 area 0
Router(config-router)#exit
Router(config)#
```

Fig 11.d: Router 2.

Output:

Fig 11.e. shows the successful data transmission from PC1 to PC3, from PC2 to PC4, from PC5 to PC0. Using runtime simulation, we

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC1	PC3	ICMP		0.000	N	1	(edit)	
	Successful	PC2	PC4	ICMP		0.000	N	2	(edit)	
	Successful	PC5	PC0	ICMP		0.000	N	3	(edit)	

Fig 11.e: Transmission of data.

can see the path that has been used by the PC to transmit data packets.