NOAKHALI SCIENCE AND TECHNOLOGY UNIVERSITY

IIT - Institute Of Information Technology

Topic: Configuration and Implementation Two and Three Router of CLI Mode

Course Title: Computer Networks Lab

Course Code: CSE -2106

Submitted By:

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Submitted To:

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Noakhali Science and Technology University

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Laboratory
No: 02

Problem Statement:

To Learn the configuration and implementation of the two-router connected to the PC and communicate with each other using Cisco Packet Tracer simulation software.
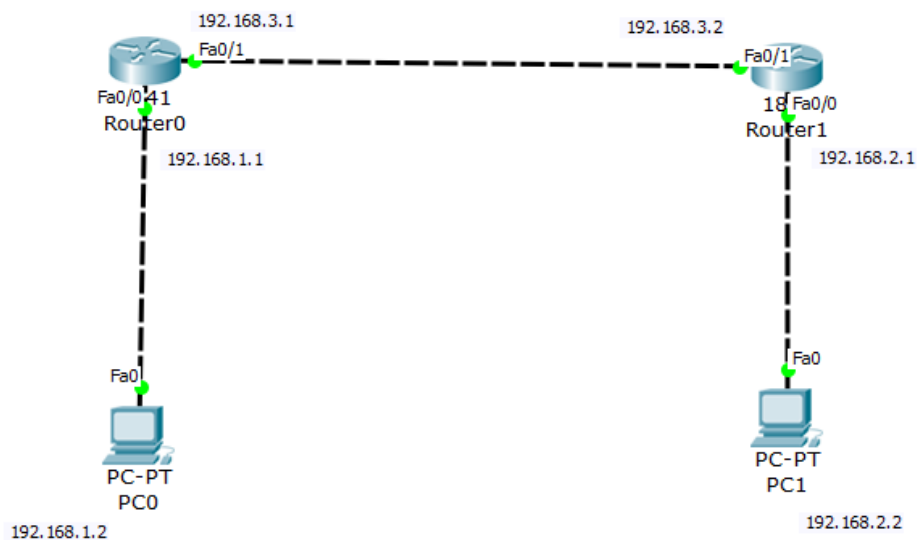
Hypothesis:

First, we need to connect the router to each PC, when it is connected then each router will be connected to the   other router by IP routing. Then one PC will be able to exchange packet transmission between with another PC

Materials:
- Cisco Packet Tracer Software (version- 6.2)

Procedure:
- Design the connection using Cisco Packet Tracer Software like figure 1

- Connect Router(1841) with PCs
- PCs are connected in parallel to the router
  - ➜ PC0 with Router0
  - ➜ PC1 with Router1

Routing Connection CLI Command:

- ✓ Enable Router Config :

```
Router>en
Router#
```

- ✓ Configure Routing Terminal:

```
Router#config T
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
```

- ✓ Interface Mode:

```
Router(config)#int fa 0/0
Router(config-if)#
```

- ✓ Ip Address and subnet mask set:

```
Router(config-if)#ip add 192.168.1.1 255.255.255.0
```

- ✓ Port Status On:

```
Router(config-if)#no shut
```

- ✓ Exit   (Save connection and close the setup)

- Two router need to be configured through these commands
- Router Interface Configuration :

Name	Interface Name	IP Address	Subnet Mask
Router0	FastEthernet 0/0	192.168.1.1	255.255.255.0
	FastEthernet 0/1	192.168.3.1	255.255.255.0
Router1	FastEthernet 0/0	192.168.2.1	255.255.255.0
	FastEthernet 0/1	192.168.3.2	255.255.255.0

- PC Configuration:

| Name	IP Address	Subnet Mask	Default Gateway
PC0	192.168.1.2	255.255.255.0	192.168.1.1
PC1	192.168.2.2	255.255.255.0	192.168.2.1

- IP routing is required to exchange packets from one router to another

```
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.3.1
```

- There first use via-connected [net-id] then using [subnet-mask] and last use [next hop IP] for which router will be connected.

- This IP must be done on Router0
- If all of the configuration has been completed correctly, the connections are green.
- Select the Message option and enter the sender and receiver information.
- If the connections are properly established and the networks are properly configured, we can send packets from one network to another.
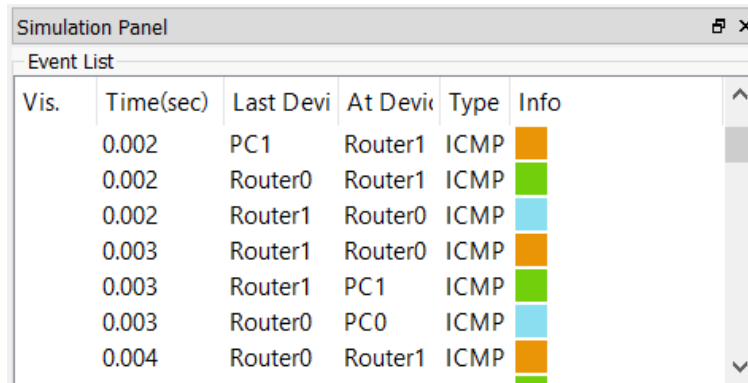
Results (Data):
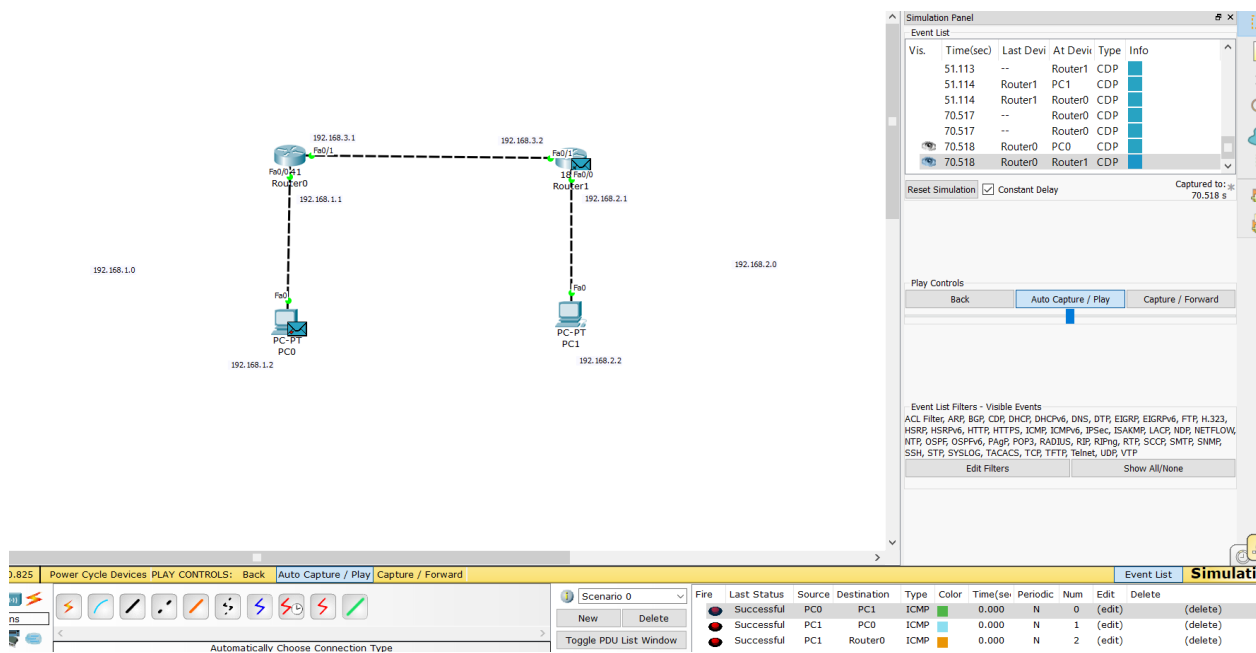
❖ We simulate the network here by sending packets from PC0 to PC1. And Router0 sends the packet to Router1, then sends the packet to the user.

We have completed testing by transmitting data through following procedure:

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

-> Transmitting message from PC0 to PC1
-> Transmitting message from PC1 to PC0
-> Transmitting message from PC1 to Router0

Simulation Panel:

Vis.	Time(sec)	Last Devi	At Devic	Type	Info
	0.002	PC1	Router1	ICMP	🟧
	0.002	Router0	Router1	ICMP	🟩
	0.002	Router1	Router0	ICMP	🟦
	0.003	Router1	Router0	ICMP	🟧
	0.003	Router1	PC1	ICMP	🟩
	0.003	Router0	PC0	ICMP	🟦
	0.004	Router0	Router1	ICMP	🟧

Conclusions:

- After Successfully doing our simulation, so we conclude that our Hypothesis is accepted.
- The hypothesis was accepted because we connected the network between the Ethernet connections on Two routers and successfully transferred packets to each and every PC.
- it's transfer packets for all connected network simultaneously.
- The flow of this network was Ip routing, if it's not the proper way to configure then the communication between routers will be disconnected and the packet transmission has shown error messages

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Laboratory
No: 03

Title: Configuration and Implementation Three Routers of CLI Mode

Problem Statement:

To Learn the configuration and implementation of the three routers connected to the PC and communicate with each other using Cisco Packet Tracer simulation software.
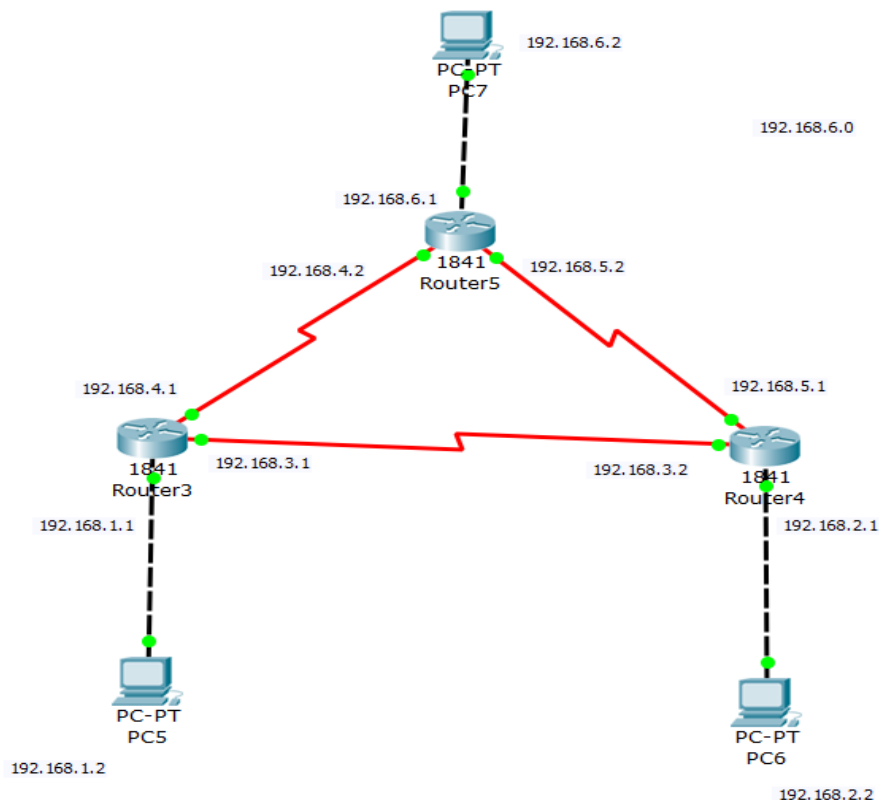
Hypothesis:

First, we need to connect the router to each PC, when it is connected then each router will be connected to the other router by IP routing. Then one PC will be able to exchange packet transmission between with another PC

Materials:
- Cisco Packet Tracer Software (version- 6.2)

Procedure:
- Design the connection using Cisco Packet Tracer Software like figure 1

- Connect Router (1841) with All PCs
- PCs are connected in parallel to the router
➔ PC5 with Router3
➔ PC6 with Router4
➔ PC7 with Router5

- On multiple connection routers, I use a WIC-2t port on each router and make serial connections with each router.
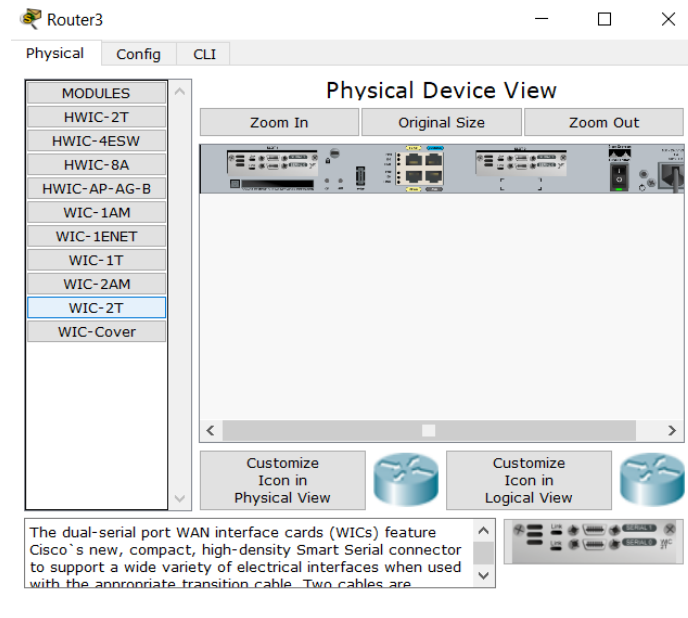
Routing Connection CLI Command:

✓ Enable Router Config :

```
Router>en
Router#
```

✓ Configure Routing Terminal:

```
Router#config T
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#
```

✓ Interface Mode:

```
Router(config)#int fa 0/0
Router(config-if)#
```

✓ If Router is Serial Port :

```
Router(config)#int Se0/0/0
```

✓ Ip Address and subnet mask set:

```
Router(config-if)#ip add 192.168.1.1 255.255.255.0
```

✓ Port Status On:

```
Router(config-if)#no shut
```

✓ Exit   (Save connection and close the setup)

- All routers need to be configured through these commands
- Router Interface Configuration :

Name	Interface Name	IP Address	Subnet Mask
Router3	FastEthernet 0/0	192.168.1.1	255.255.255.0
	Serial 0/0/0	192.168.3.1	255.255.255.0
	Serial 0/0/1	192.168.4.1	255.255.255.0
Router4	FastEthernet 0/0	192.168.2.1	255.255.255.0
	Serial 0/0/1	192.168.5.1	255.255.255.0
	Serial 0/1/0	192.168.3.2	255.255.255.0
Router5	FastEthernet 0/0	192.168.6.1	255.255.255.0
	Serial 0/0/0	192.168.5.2	255.255.255.0
	Serial 0/1/0	192.168.4.2	255.255.255.0

- PC Configuration:

| Name	IP Address	Subnet Mask	Default Gateway
PC5	192.168.1.2	255.255.255.0	192.168.1.1
PC6	192.168.2.2	255.255.255.0	192.168.2.1
PC6	192.168.6.2	255.255.255.0	192.168.6.1

- IP routing is required to exchange packets from one router to another

```
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.3.1
```

- There first use via-connected [net-id] then using [subnet-mask] and last use [next hop IP] for which router will be connected.
- This IP must be done on Router 3, Router 4 and Router 5.
- If all of the configuration has been completed correctly, the connections are green.
- Select the Message option and enter the sender and receiver information.
- If the connections are properly established and the networks are properly configured, we can send packets from one network to another.

Results (Data):
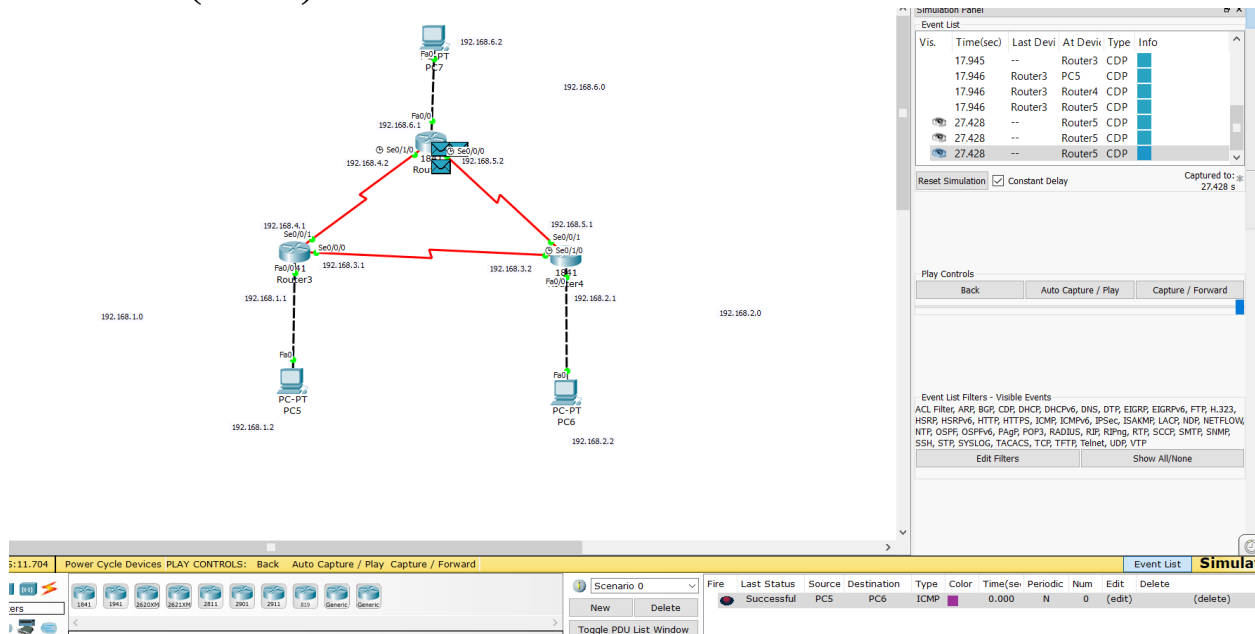
- ❖ We simulate the network here by sending packets from PC5 to PC6. And Router3 sends the packet to Router4, then sends the packet to the user.

We have completed testing by transmitting data through following procedure:

Fire	Last Status	Source	Destination	Type	Color	Time(sec	Periodic	Num	Edit	Delete
●	Successful	PC5	PC6	ICMP		0.000	N	0	(edit)	(delete)
●	Successful	PC6	PC7	ICMP		27.428	N	1	(edit)	(delete)
●	Successful	PC7	PC5	ICMP		0.000	N	2	(edit)	(delete)

-> Transmitting message from PC5 to PC6
-> Transmitting message from PC6 to PC7
-> Transmitting message from PC7 to PC5

Simulation Panel:

Vis.	Time(sec)	Last Devi	At Devic	Type	Info
	0.001	PC7	Router5	ICMP	
	0.002	Router3	Router4	ICMP	
	0.002	Router5	Router3	ICMP	
	0.003	Router4	PC6	ICMP	
	0.003	Router3	PC5	ICMP	
	0.004	PC6	Router4	ICMP	
	0.004	PC5	Router3	ICMP	

Conclusions:

- After Successfully doing our simulation, so we conclude that our Hypothesis is accepted.
- The hypothesis was accepted because we connected the network between the serial connections on three routers and successfully transferred packets to each and every PC.
- it's transfer packets for all connected network simultaneously.
- The flow of this network was Ip routing, if it's not the proper way to configure then the communication between routers will be disconnected and the packet transmission has show error messages