



East West University

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Mini project

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1. Introduction:

This is a mini project on a large number of computers, with a complex network infrastructure. This complex network infrastructure is switching/routing mechanisms are in practice. Full network has covered its six computers with four routers.

2. Tools:

1. Routers (PT-Router)
2. Switches (2960)
3. Other devices- PC
4. Connectors- straight through (Router to Switch and Switch to PC), crossover (Router to Router), serial DCE

3. Implementations:

In this project, I have used Cisco Packet Tracer software (V-8.2.2). Here I have implanted:

1. Established a full network using four routers.
2. Network addresses and Default Gateway addresses were given from Class A.

4. Physical Design:

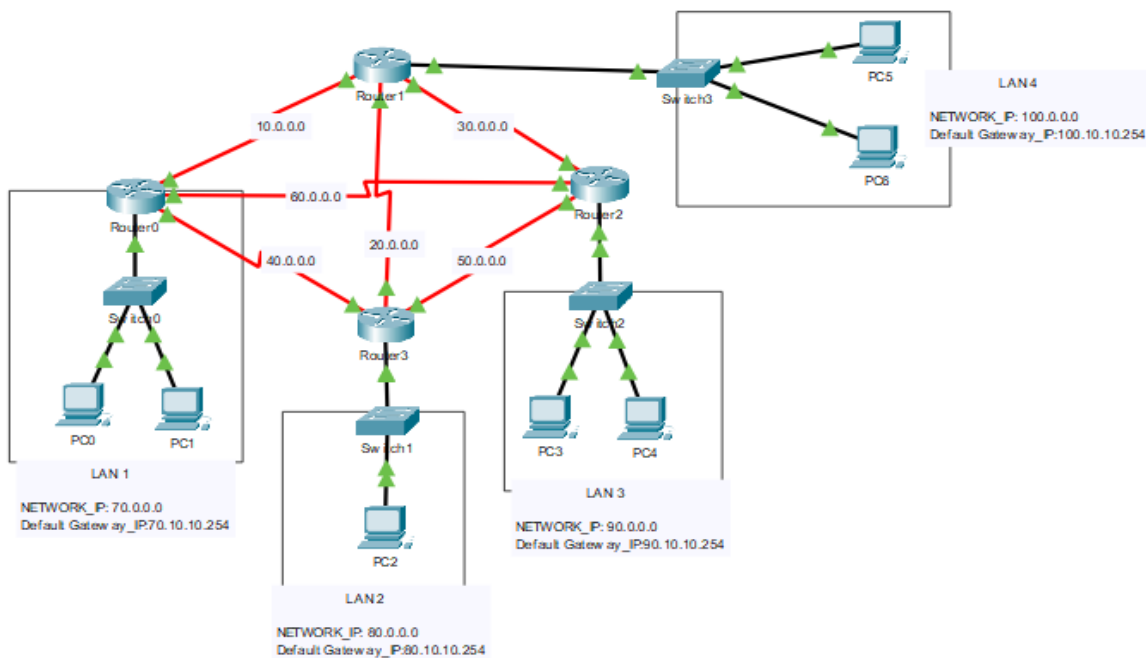


Figure 1: physical diagram of networks

5. Project tasks description:

5.1. Network:

In this project, there is total 8 networks. I have used all the IP addresses in those networks from class A. LAN-1, 2, 3, and 4 network has class-“A” IP address. Also the router to router networks have class- “A” IP address. The number of networks is fixed in this project.

5.2.Connectivity between all the hosts:

After configuring all routers, switches, host, I have tested the whole network by sending simple PDUs from one host to another host. The result is perfect. Every PDUs successfully reached to destination from different networks. So connectivity between all the hosts are perfectly established.

PING operation PC0 from Router0 and PC4 from Router1 is shown. The given designed PC4 is actually my PC5.









PDU List Window									
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit
	Successful	PC5	PC2	ICMP		0.000	N	0	(edit)
	Successful	PC0	PC5	ICMP		0.000	N	1	(edit)
	Successful	PC2	PC4	ICMP		0.000	N	2	(edit)
	Successful	PC1	PC6	ICMP		0.000	N	3	(edit)

Figure 2: some examples of successful connections between hosts of different networks

```
Command Prompt X

Cisco Packet Tracer PC Command Line 1.0
C:\> ping 100.10.10.2

Pinging 100.10.10.2 with 32 bytes of data:

Reply from 100.10.10.2: bytes=32 time=6ms TTL=126
Reply from 100.10.10.2: bytes=32 time=1ms TTL=126
Reply from 100.10.10.2: bytes=32 time=1ms TTL=126
Reply from 100.10.10.2: bytes=32 time=1ms TTL=126

Ping statistics for 100.10.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 6ms, Average = 2ms

C:\>
```

Figure 3: examples of successful connections between PC0 from Router0 and PC4 from Router1

6. Limitations:

In this project, all the tasks are completed successfully. Here all the hosts can communicate with each other. I have used a small amount of hosts in each network to give the project. A small amount of hosts could be a limitation.

7. Conclusion:

Despite the fact that I encountered some difficulties, I was able to implement my plan in accordance with the project description in the end. This mini project is a reflection of our gained knowledge from Data Communications course. In this project, we had to use the knowledge of different types of classes of IP address, networks of different types of protocol and so on.

8. Codes:

To configure the router I had to use many lines of code in routers' CLI.

8.1. Configure the ports of routers:

LAN 1:

```
interface fa0/0
ip address 70.10.10.254 255.0.0.0
no shut
do wr
exit
```

```
interface se2/0
ip address 10.0.0.1 255.0.0.0
clock rate 64000
no shut
do wr
exit
```

```
interface se3/0
ip address 40.0.0.1 255.0.0.0
no shut
do wr
exit
```

```
interface se7/0
ip address 60.0.0.1 255.0.0.0
clock rate 64000
no shut
do wr
exit
```

LAN 2:

```
interface fa0/0
ip address 80.10.10.254 255.0.0.0
no shut
do wr
exit
interface se2/0
ip address 50.0.0.2 255.0.0.0
no shut
do wr
exit
```

```
interface se3/0
ip address 40.0.0.2 255.0.0.0
clock rate 64000
no shut
do wr
exit
```

```
interface se7/0
ip address 20.0.0.2 255.0.0.0
no shut
do wr
exit
```

LAN 3:

```
interface fa0/0
ip address 90.10.10.254 255.0.0.0
no shut
do wr
exit
```

```
interface se2/0
ip address 30.0.0.2 255.0.0.0
no shut
do wr
exit
```

```
interface se3/0
ip address 50.0.0.1 255.0.0.0
clock rate 64000
no shut
do wr
exit
```

```
interface se7/0
ip address 60.0.0.2 255.0.0.0
no shut
do wr
exit
```

LAN 4:

```
interface fa0/0
ip address 100.10.10.254 255.0.0.0
no shut
```

```
do wr
```

```
exit
```

```
interface se2/0
```

```
ip address 30.0.0.2 255.0.0.0
```

```
no shut
```

```
do wr
```

```
exit
```

```
interface se3/0
```

```
ip address 50.0.0.1 255.0.0.0
```

```
clock rate 64000
```

```
no shut
```

```
do wr
```

```
exit
```

```
interface se7/0
```

```
ip address 60.0.0.2 255.0.0.0
```

```
no shut
```

```
do wr
```

```
exit
```

8.2. Routing table to the routers dynamically (OSPF)

```
router ospf 1
```

```
network 10.0.0.0 0.255.255.255 area 1
```

```
network 60.0.0.0 0.255.255.255 area 1
```



```
network 40.0.0.0 0.255.255.255 area 1
network 70.0.0.0 0.255.255.255 area 1
exit
```

```
router ospf 2
network 10.0.0.0 0.255.255.255 area 1
network 20.0.0.0 0.255.255.255 area 1
network 30.0.0.0 0.255.255.255 area 1
network 100.0.0.0 0.255.255.255 area 1
exit
```

```
router ospf 3
network 60.0.0.0 0.255.255.255 area 1
network 50.0.0.0 0.255.255.255 area 1
network 30.0.0.0 0.255.255.255 area 1
network 90.0.0.0 0.255.255.255 area 1
exit
```

```
router ospf 4
network 20.0.0.0 0.255.255.255 area 1
network 50.0.0.0 0.255.255.255 area 1
network 40.0.0.0 0.255.255.255 area 1
network 80.0.0.0 0.255.255.255 area 1
exit
```