Lab 7
Design WAN using Routers and Multiple LANs

What is Routing?

Routing is the process of selecting best paths in a network or *routing* is the process of moving *packets* across a network from one host to another. It is usually performed by dedicated devices called *routers*. Each intermediary router performs routing by passing along the message to the next router. Part of this process involves analyzing self-configuring *routing tables* to determine the *best* (i.e., optimal) path.

There are two basic methods of building a routing table:
- Static Routing
- Dynamic Routing

A *Static Routing Table:* is created, maintained, and updated by a network administrator, manually.

Aims of This Lab

➢ The aim of this Lab is to show how to design WAN using Routers.

➢ The aim of this Lab is to show how to configure routers.

➢ After this Lab, the Student can know how to configure routers.

Experiment Procedure

1. **Design Network**

   ➢ Design three LANs; each one consists of two Computers and switch.
   ➢ Select three routers type 2621*M.
   ➢ Connect each router to one LAN.
   ➢ Connect all routers to each other via serial bus as shown in figure below.
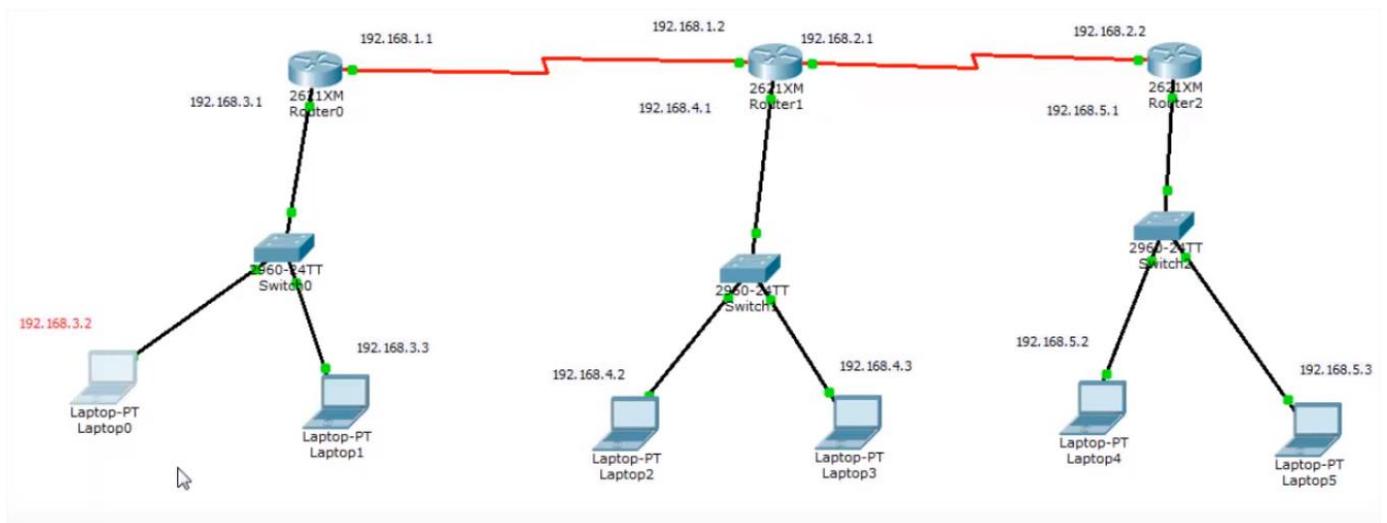
The operation of WAN design consists of the below steps:

1. Design the networks (LANs) and routers.
2. Connect all of them using suitable cables.
3. Configure IP address for all devices.
4. Configure routers by building routing table statically.

Main commands for configure routers

1. Enable
2. Config t

3. Interface type number

4. Ip address address mask

5. Clock rate 64000

6. No sh

Main commands for build routing table

1. Enable

2. Show IP route (this command used to show which route connect to the router)

3. Confige t

4. Ip route <required address><mask> <gate address>

ROUTER 1

Network address	Nexthop
192.168.1.0	Serial 0/0
192.168.3.0	Fast 0/0
192.168.4.0	192.168.1.2
192.168.5.0	192.168.1.2
192.168.2.0	192.168.1.2

ROUTER 2

Network address	Nexthop
192.168.1.0	Serial
192.168.4.0	Fast
192.168.2.0	serial
192.168.3.0	192.168.1.1
192.168.5.0	192.168.2.2

ROUTER 3

Network address	Nexthop
192.168.5.0	fast
192.168.2.0	Fast
192.168.1.0	192.168.2.1
192.168.4.0	192.168.2.1
192.168.3.0	192.168.1.1

Questions (put the answer in your report)

1. What is the main function of router?

2. What is the routing table?

3. What is the meaning of static routing?

4. How to design WAN?