LAB#07(a)

Static Routing

To Configuring Static Routing.

Theory:

Static Routing:

Static routing is a method of entering routes into the device's routing table stored in a configuration file manually which is loaded when the Cisco router starts up. These routes can be configured manually by network administrators.

Advantages:

Static routing has the following advantages:

- There is no overhead on the router CPU.
- There is no bandwidth usage between routers.
- It adds security because the administrator can choose to allow routing access to certain networks only.

Disadvantages:

Static routing has the following disadvantages:

- The administrator must really understand the internetwork and how each router is connected in order to configure routes correctly.
- If a network is added to the internetwork, the administrator has to add a route to it on all routers—manually.
- It's not possible in large networks because maintaining it would be a full-time job in itself.
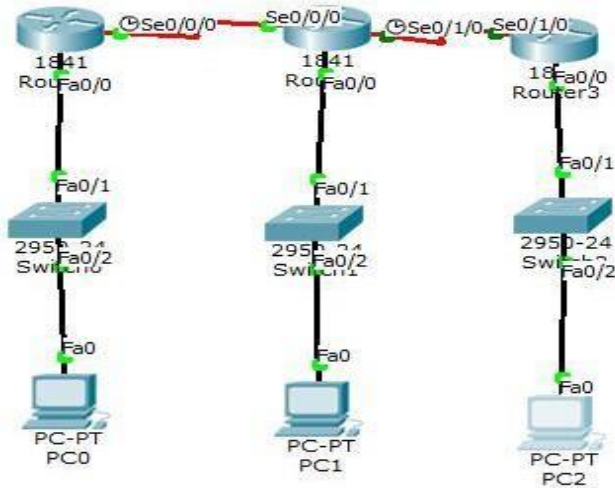
Procedure:
Step1:

The topology consists of 3 Cisco routers which are connected with each other and also with 3switches and switches are connected with 3PCs

Step 2:

A WIC-1T card is placed in the slots in each router. Switch off the router and place the card in the slots and turn it on again. One end of the cable is DTE and the other is automatically DCE.

Step 3:

We have total 5 networks , now assign ip to each network, assign first three ip in pc using default gateways: 192.168.1.1, 192.168.2.1, 192.168.3.1and remaining two on the serial interface of router.

Step 4:

Now configure fast Ethernet and serial interface of router by using CLI. Configuration of R0 are as follow:

```
Router#conf t
Router#conf terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int fa 0/0
Router(config-if)#ip add
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shut
Router(config-if)#no shutdown
Router(config-if)#exit

Router(config)#int s 0/0/0
Router(config-if)#ip add
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#clock r
Router(config-if)#clock rate 64000
Router(config-if)#no shut down
Router(config-if)#exit
Router(config)#
```

Step 5:

Enabling Static Routing:

By using following Syntax:
Destination network address , subnet mask , next Hop
Enable a static routing process, which places you in router configuration mode. And associate the networks with a static routing process. Then enter the command **show ip route** on Ro, R1 and R2 to verify that the new route is now in the routing table.

Exercises:

Q1. What is static routing what is the use of it?

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Q2. How do we configure static routing?

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Q3. Write the advantages & dis advantages of dynamic routing.

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Q.4. Write the advantages & dis advantages of Static routing.

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Q.5. What is meant by the term Autonomous system?

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Q.6. How do you display the contents of a Cisco IP routing table?

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LAB#7 (b)
Virtual Local Area Networks

To study about VLAN and their implementation.

Theory:

VLAN:

VLANs allow network administrators to partition their networks to match the functional and security requirements of their systems without having to run new cables or make major changes in their current network infrastructure.
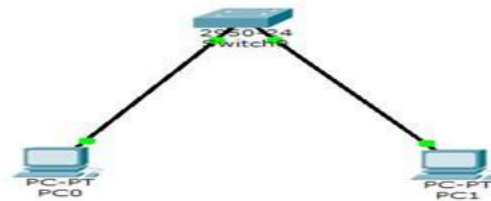
Firstly assign IP to pc then ping it both pc are successfully connected to switch.

Step #1:

For creating VLAN 2 on PC0 and vlan3 on PC1 first assign name to VLAN on switch CLI by using following commands.

```
Primary Secondary Type                Ports
------- --------- ------------------- -------------------------------
Switch>
Switch>enable
Switch#configure t
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 2
Switch(config-vlan)#name marketing
Switch(config-vlan)#exit
Switch(config)#vlan 3
Switch(config-vlan)#name Human resource

                            ^
% Invalid input detected at '^' marker.

Switch(config-vlan)#name Humanresource
Switch(config-vlan)#exit
Switch(config)#
```

Step #2:

After assigning name to VLAN write the following commands for activating VLAN

```
Switch#configure t
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface fa 0/1
Switch(config-if)#switchport access vlan 2
Switch(config-if)#exit
Switch(config)#interface fa 0/5
Switch(config-if)#switchport access vlan 3
Switch(config-if)#exit
Switch(config)#
```

VLAN has created pass the message and observed the result.

EXERCISES:

Q.1) After ping command what message you received and why?

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Q.2) Advantage of vlan?

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Q.3) What is the purpose of ping command?

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