Department of Computer Science and Engineering

Islamic University of Technology (IUT)

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Lab Report 01

CSE 4512 : Computer Networks Lab

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Section: B

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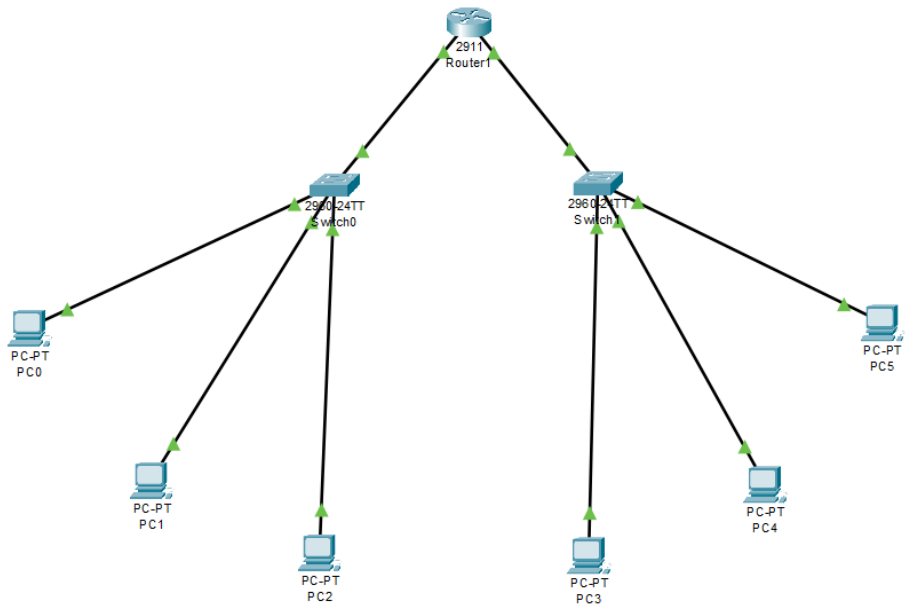
Title: Configure router using static routing to connect multiple networks in Cisco Packet Tracer

Objectives:

1. Understand how to operate Cisco Packet Tracer
2. Learn to create and connect multiple networks using static routing
3. Understand wiring of different network components like router, switch, PC etc.
4. Configure router and switch interfaces
5. Verify connectivity of the network
6. Understand the basics of IP Subnetting
7. Learn to subnet a network following given specifications

Diagram of the experiment:

(Provide screenshot of the final network topology. Make sure to label the network components.)



Working Procedure:

(Explain in brief how you completed the tasks. Provide necessary screenshots of used commands for each task.)

Three different desktops of different IP addresses were assigned to two switches, indicating they are from separate networks. Then the switches are connected through a router

```
Router#configur
Router#configure ter
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#inter
Router(config)#interface giga
Router(config)#interface gigabitEthernet 0/0
Router(config-if)#ip address 192.168.16.1 255.255.255.0
Router(config-if)#no sh
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#copy running-config star
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#configure te
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface
Router(config)#interface gigabitet
Router(config)#interface gigabitethernet 0/1
Router(config-if)#ip address 192.168.26.1 255.255.255.0
Router(config-if)#no shut
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

Router(config-if)#end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#copy running-
Router#copy running-config star
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Router#
```

Questions (Answer to the point):

Q1. Write the command to check the status of all interfaces in a router.
Ans: show interfaces

Q2. Why do we use switches and not hubs?
Ans: Switches are used instead of hubs because they function as effective traffic controllers in computer networks. Consider a switch to be a manager who knows where every computer is and distributes information immediately to the correct one. This improves network speed and reduces traffic congestion. Hubs, on the other hand, act as loudspeakers, broadcasting information to everyone while causing confusion and slowing down the network. Switches are just better at controlling and directing data, allowing our networks to run more smoothly.

Q3. How do you make all the configuration changes in a cisco device persistent? What would happen if you don’t do this?
Ans: When we make changes to a Cisco device, such as configuring networks, we must store those modifications, so they are not lost when the device is switched off or restarted. It's similar to saving a document on our computer so we don't lose your efforts.

If we forget to save the modifications, our device will also forget them when it restarts. This might cause difficulties since the device will revert to the previous saved settings, erasing any new configurations we made.

Q4. What are the interfaces of the router? Why are they necessary?
Ans: Interfaces in a router are the links or connections that allow the router to communicate with other devices or networks. A router functions as a traffic cop for data. It uses these interfaces to connect to various locations, such as our hall network.

Connect Networks: Interfaces let the router link up with different networks, allowing them to share information.
Decide Where Data Goes: The router uses these interfaces to figure out the best way to send data between different networks. It's like the router's map for directing traffic.

Organize Traffic: Interfaces help in separating different types of data. For example, they might keep your video calls on one road and your internet browsing on another, making sure things run smoothly.
Work with Different Tech: Routers need different interfaces for different types of connections, such as wired or wireless. It's like having different plugs for different devices.

Keep Things Safe: Interfaces help in keeping the network secure. They can control which data is allowed in or out, acting like a security guard for your network.

Q5. Why is default gateway necessary?
Ans: A default gateway serves as a guide for your computer or device, directing it to the outside network, such as the Internet. It's similar to the front door of your home; without it, your device would be unable to leave its own network and connect to other networks or websites. When your device needs to communicate with anything it doesn't know how to access directly, it consults the default gateway for assistance. As a result, having a default gateway allows your device to travel and communicate outside its local surroundings.

Challenges (if any):