TP3: Implementation of Static Routing

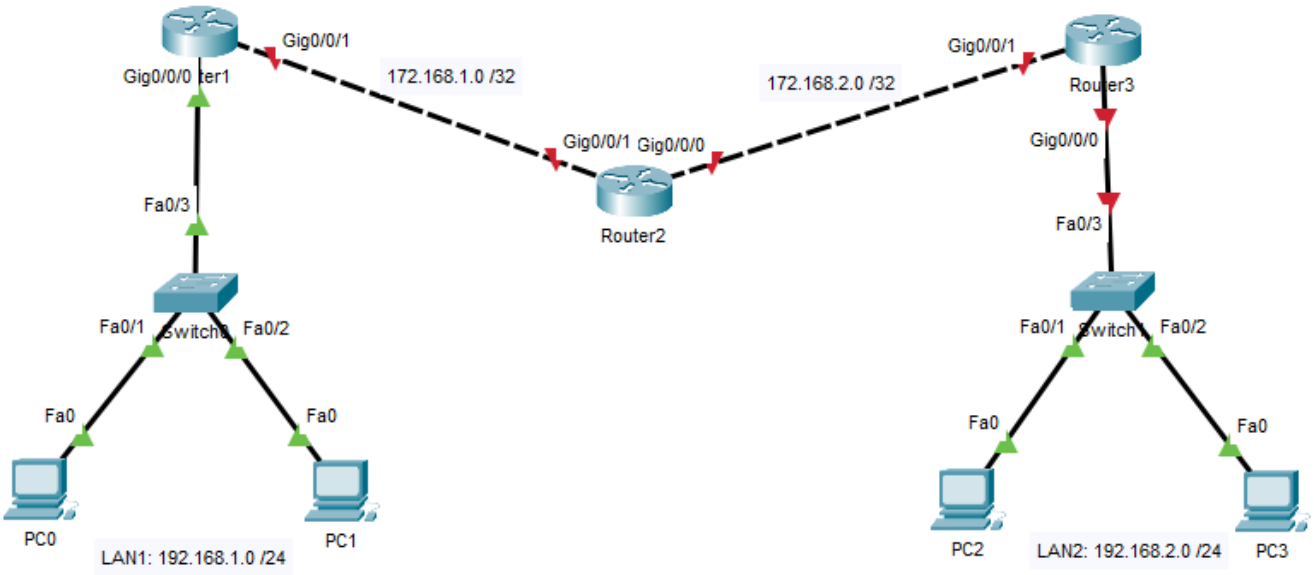
Objectives

1. To learn how to configure a network topology using command mode
2. To learn how to configure a topology with Static Routing Protocol
3. To test and verify the configuration

Part A: configuring a router using CLI (Command Line Interface)

After configuring the given network using the CLI, a packet should be ping from any one machine to another.

Topology



Router1: Configuring the Gig0/0/0 interface:

Continue with configuration dialog? [yes/no]: no

Router>enable
Router#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Router1
Router1(config)#interface g0/0/0
Router1(config-if)#ip address 192.168.1.1 255.255.255.0
Router1(config-if)#description router1 g0/0/0
Router1(config-if)#no shutdown
Router1(config-if)#exit
Router1(config)#

Exercise

1. Configure PC0 and PC1 with following IP address and Subnet Mask.

Host	IP Address	Subnet Mask
PC1	192.168.1.10	255.255.255.0
PC2	192.168.1.11	255.255.255.0

2. Use ping command to verify the connection from PC1 to PC2.

3. Use ping command to verify the connection from PC1 and PC2 to the Router1.
4. Do the same procedure for Router3, PC3 and PC4 with The following IP address.

Host	IP Address	Subnet Mask
Router3 interface g0/0/0	192.168.2.1	255.255.255.0
PC3	192.168.2.10	255.255.255.0
PC4	192.168.2.11	255.255.255.0

5. Check the connection from PC3 to PC4 using ping command.
6. Check the connection from PC3 and PC4 to Router3 using ping command.

Part B: configuring static routing using CLI (Command Line Interface)

A router can learn about remote networks in one of two ways:

1. Manually, from configured static routes
2. Automatically, from a dynamic routing protocol

Static routes are commonly used when routing from a network to a stub network. A stub network is a network accessed by a single route.

The ip route command:

The command for configuring a static route is *ip route*. The complete syntax for configuring a static route is:

Router(config)#ip route network-address subnet-mask {ip-address | exit-interface}

The following parameters are used:

- *network-address* - Destination network address of the remote network to be added to the routing table
- *subnet-mask* - Subnet mask of the remote network to be added to the routing table. The subnet mask can be modified to summarize a group of networks.

One or both of the following parameters must also be used:

- *ip-address* - Commonly referred to as the next-hop router's IP address
- *Exit-interface* -Outgoing interface that would be used in forwarding packets to the destination network.

Procedure

To implement this practical, the network topology needs to be configured using the commands learned previously. After configuring the given network, a packet should be ping from any one machine to another.

Router1 Configuring a static route

Router1#config t
Router1(config)#ip route 192.168.2.0 255.255.255.0 172.16.1.2
Router1(config)#exit
Router1#copy run start

Verify Router1 configuration command:

Router1#show ip route

Questions

1. Configure Router2 and Router3 with their respective IP address and also apply static command.
2. Verify your configuration by using the command – *RouterX# show ip route*
3. Add a PC5 to the LAN2 and configure it with its IP.
4. Test the connectivity from PC1 to PC5 by using *ping* command.