Lab Manual for Computer Communication and Networking

Lab No. 8

Static Routing

BAHRIA UNIVERSITY KARACHI CAMPUS
Department of Software Engineering

COMPUTER COMMUNICATION & NETWORKING

LAB EXPERIMENT # 8

Static Routing

OBJECTIVE: -

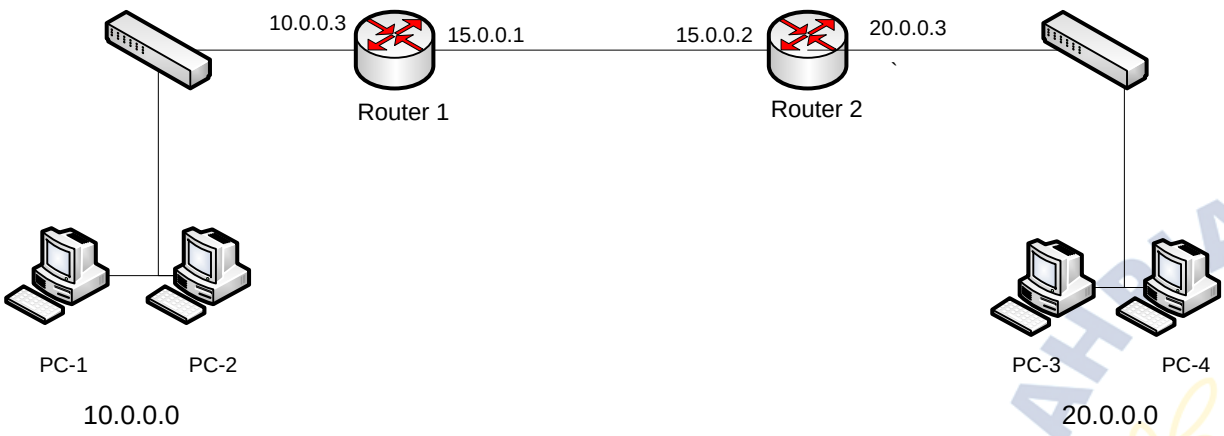
- This lab assignment helps in understanding how static routing can be configured on a router.

THEORY: -

Static routing occurs when you manually add routes in each router's routing table. There are pros and cons to static routing, but that's true for all routing processes. Static routing has the following benefits:

- There is no overhead on the router CPU, which means you, could possibly buy a cheaper router than you would use if you were using dynamic routing.
- It adds security because the administrator can choose to allow routing access to certain networks only.
- Static routing has the following disadvantages:
- The administrator must really understand the internetwork and how each router is connected to configure routes correctly.
- If a network is added to the internetwork, the administrator must add a route to it on all routers—by hand.
- It's not feasible in large networks because maintaining it would be a full-time job.

NETWORK TOPOLOGY: -



PROCEDURE AND OBSERVATION: -

Step01: Configuring static routing on router 1

```
Router1(config)#interface GigabitEthernet0/0
Router1(config-if)#ip address 15.0.0.1 255.0.0.0
Router1(config-if)#no shut
Router1(config-if)#exit

Router1(config)#interface fa 0/0
Router1(config-if)#ip address 10.0.0.3 255.0.0.0
Router1(config-if)#no shut
Router1(config-if)#exit

Router1(config)#ip route 20.0.0.0 255.0.0.0 15.0.0.2          (IP
route)
Router1# show ip route
```

The above given command inserts a static route into the routing table of router saying, if a packet having destination address of network 20.0.0.0/8 is received on any of the router interfaces then it should be routed to 15.0.0.2

Step 02: Configuring static routing on router 2

```
Router2(config)#interface GigabitEthernet0/0
Router2(config-if)#ip address 15.0.0.5 255.0.0.0
Router2(config-if)#no shut
Router2(config-if)#exit

Router2(config)#interface fa 0/0
Router2(config-if)#ip address 20.0.0.3 255.0.0.0
Router2(config-if)#no shut
Router2(config-if)#exit

Router2(config)#ip route 10.0.0.0 255.0.0.0 15.0.0.1          (IP
route)
Router2# show ip route
```

The above given command inserts a static route into the routing table of router saying, if a packet having destination address of network 10.0.0.0/8 is received on any of the router interfaces then it should be routed to 15.0.0.1

Step03: Verify the route by pinging from Router 1 to Router 2

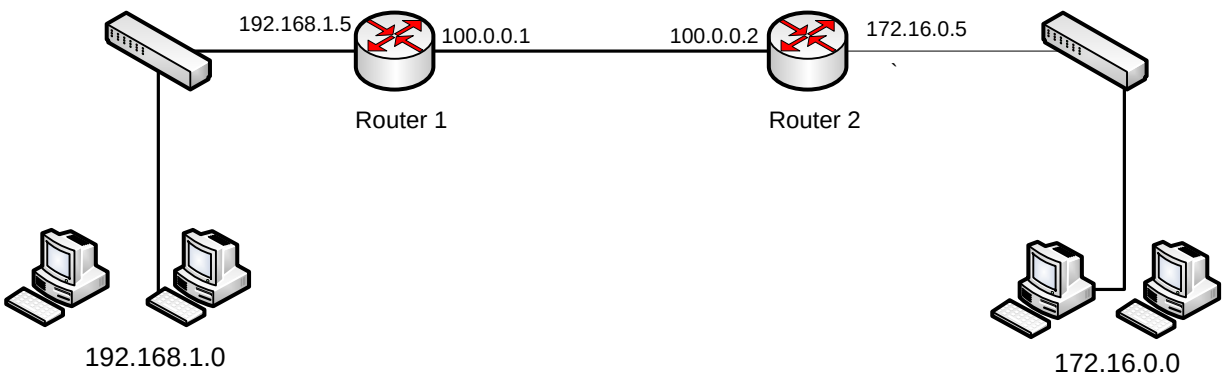
```
Router2# ping 20.0.0.2
Router1# ping 10.0.0.2
```

Step04: Verify the route by pinging from PC 1 to PC3

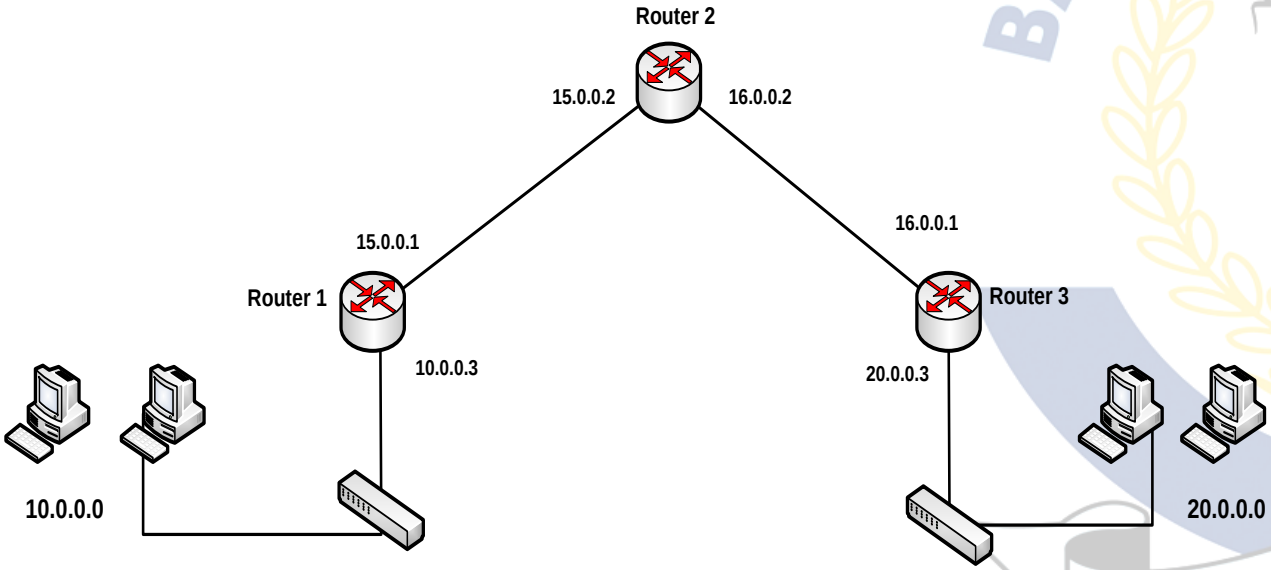
```
C:\> ping 10.0.0.1    (from PC 1)
C:\> ping 20.0.0.2    (from PC 3)
```

QUESTIONS: -

1. **Configure static route on the following network and show all necessary configuration steps for each router.**



2. Configure static route on the following network and show all necessary configuration steps for each router.



TIME BOXING:

Activity Name	Activity Time	Total Time
Instruments Allocation + Setting up Lab	10 mints	10 mints
Walk through Theory & Tasks (Lecture)	60 mints	60 mints
Implementation & Practice time	90 mints	80 mints
Evaluation Time	20 mints	20 mints
	Total Duration	180 mints