

ROUTING AT NETWORK LAYER

AIM: (a)

Simulate static Routing Configuration using Cisco Packet Tracer

SETTING UP PRACTICAL LAB: Now we create a packet tracer lab. Each network has two routes to reach. If the link bandwidth of all routes is same, we use the route & another route as the backup route. If the link bandwidth & the number of routes are same, we can use any route as the main route & another route as the backup route.

If we specify two routes for the same destination the router automatically selects the best route for the destination & adds the route to the routing table. For example, if you use the following commands to create two static routes for network 30.0.0/8, the route will place the first route.

```
# ip route 30.0.0.0 255.0.0.0 20.0.0.2 10
```

```
# ip route 30.0.0.0 255.0.0.0 40.0.0.2 20
```

CREATING, ADDING, VERIFYING STATIC ROUTES :

Routers automatically learn their connected networks. We only need to add routes for the networks that are not available on the router's interface. Eg) network 10.0.0.0/8, 20.0.0.0/8 & 40.0.0.0/8 are directly connected to Router (1).

Router 0 Requirements:

- Create 2 routes for network 30.0.0.0/8
- Create 2 routes for host
- Create 2 routes for network 50.0.0.0/8
- Verify the router

Router 1 Requirements:

- Create 2 routes for each network
- Verify the router

Route 2 Requirements:

Create static routes for network 10.0.0.0/8 & network 30.0.0.0/8 & verify the router adds both routes to the routing table.

VERIFYING STATIC ROUTING:

- By sending ping requests to a PC of network & tracing the path they take to reach another network.

The traceroute command sends ping requests to the destination host & tracks the path they take to reach destination

- By listing the routing table entries on Router()

DELETING A STATIC ROUTE:

To delete a static route, use the following steps:

- Use the 'show ip route static' command to print all static routes.
- Note down route you want to delete
- Use the 'no ip route' command to delete the route

If you have a backup route, the backup route becomes the main route when you delete the main route.

AIM: (b)

Simulate RIP using CISCO Packet Tracer

ASSIGN IP ADDRESS TO PCs:

Double click PCs & click Desktop menu item & click IP Configuration.

ASSIGN IP ADDRESS TO INTERFACES OF ROUTERS:

Double click Router 0 & click CLI & press Enter key to access the command prompt of Router 0.

Interface mode is used to assign IP address & other parameters. It can be accessed by Global configuration mode.

Router>enable

Router# configure terminal

Enter configuration commands, one per line

Router(config)#

Following commands will assign IP address on Fast Ethernet 0/0.

Router(config)# interface

Router(config-if)# ip address

Router(config-if)# no shutdown

Router(config-if)# exit

Router(config)#

no shutdown command will bring the interface up
exit command is used to return in global configuration mode.

Serial interface needs two additional parameter are always configured at DCE end.

Router# show controllers serial 0/0
Interface Serial 0/0/0
Hardware is PowerQUICC MPC860
DCE V.35, clock rate 20000000

CONFIGURE RIP ROUTING PROTOCOL:

- Enable RIP routing protocol from global configuration mode.
- Tell RIP routing protocol which networks you want to advertise.
- To verify the steps we use a ping command.

#(config)
router# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router#

#(config)# router rip
Router#

#(config-router)# network 192.168.1.0
Router#

RESULT :

Routing at Network layer successfully implemented.

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