

Exp No: 11

## Routing at Network layer

A)

AIM: Simulate static routing config using Cisco

packet tracker.

Concept: Static routing means manually adding routes

• Static routing means manually adding routes

to a router's routing table.

• used when network paths are simple / fixed.

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• If the main route fails the backup route automatically takes over.

Network Setup:

Routers	Directly Connected Networks	Other Networks
Router 0	10.0.0.0-18, 20.0.0.0-18.	30.0.0.0-18
Router 1	20.0.0.0-18, 30.0.0.0-18	10.0.0.0-18
Router 2	40.0.0.0-18, 50.0.0.0-18.	10.0.0.0-18, 20.0.0.0-18

Router 0:

Router > enable

Router # configure terminal

Router (config) # ip route 50.0.0.0 255.0.0.0

Router # show ip route static.

Router 1:

Router > enable

Router # configure terminal

Router 0

Router #

Router 2:

Router

Router

Router

Router

Verification

- use

- use

between

Deleting

Route

If a

router

Result

& ver

route

route

ip route

Router (config) # ip route 40.0.0.0 255.0.0.0 0  
 Router # show ip route static.

Router 2:

Router > enable

Router # configure terminal

Router (config) # ip route 30.0.0.0 255.0.0.0 0

Router # show ip route static.

Verification:

- use show ip route to view static routes.
- use ping / traceroute to test connectivity between network.

Deleting a static routes:

- Router # show ip route static
- If a backup route exists it becomes the main router automatically.

Result:

Static routing was successfully configured & verified using Cisco packet tracker. The routers automatically switched to backup router when the main router failed.

A direct connection is made between R1 and R2.

B) AIM: Simulate RIP using Cisco packet tracer.

concept:

- RIP is a dynamic routing protocol that automatically exchanges routing information between routers. It uses hop count as a metric.
- It uses hops count as a metric.
- If one router fails, it automatically switches to an alternate route.

Router configuration steps:

Assign IP addresses

Router > Enable

Router # configure terminal

Router (config) # ip address 10.0.0.1 255.0.0.0

Router (config-#) # no shutdown

Repeat similar steps Router 1 & Router 2 using PCs

Router 0

Router (config) # router rip

Router (config-router) # network 10.0.0.0

Router (config-router) # network 192.168.0.0

Router 1

Router (config) # router rip

Router (config-router) # network 192.168.0.244

Router 2

Router (config) # router rip

Router

Verification

• use ping

• use traceroutes.

→ RIP  
Via

Result:

(Ans)

Configure

Q

27

Ans

(Ans)

Router (config-router) # network 20.0.0.0

Verification:

- Use ping to test connectivity between PC0 & PC1.
- Use traceroute to trace the route taken by packets.

→ RIP automatically switches to the alternate path via router 1.

Result:

RIP routing protocol was successfully configured & verified.

✓ ✓ ✓ ✓ ✓