10-10-2025

Practical 11

a) Simulate Static Routing configuration using cisco packet tracer.

Aim:

To simulate Static Routing Configuration using cisco Packet tracer.

procedure:

1) Set up the network topology with three routers (Router 0, Router 1, Router 2) connected to their respective networks:

Router 0 connected to 10.0.0.0/8, 20.0.0.0/8, 40.0.0.0/8

Router 1 connected to 20.0.0.0/8, 30.0.0.0/8, 50.0.0.0/8

Router 2 connected to 40.0.0.0/8, 50.0.0.0/8

2) Access the CLI of Router 0 and configure static routes for networks not directly connected.

Add two static routes for 30.0.0.0/8, with the first via Router 1 (main) & second via Router 2 (backup) using different administrative distances.

Add two static host-routes for 30.0.0.100/32, main via Router 2 & backup via Router 1.

Add two static routes for 50.0.0.0/8, main via Router 2 & backup via Router 1.

3) Access Router 1 CLI & configure:

Two static routes for 10.0.0.0/8, main via Router 0, backup via Router 2.

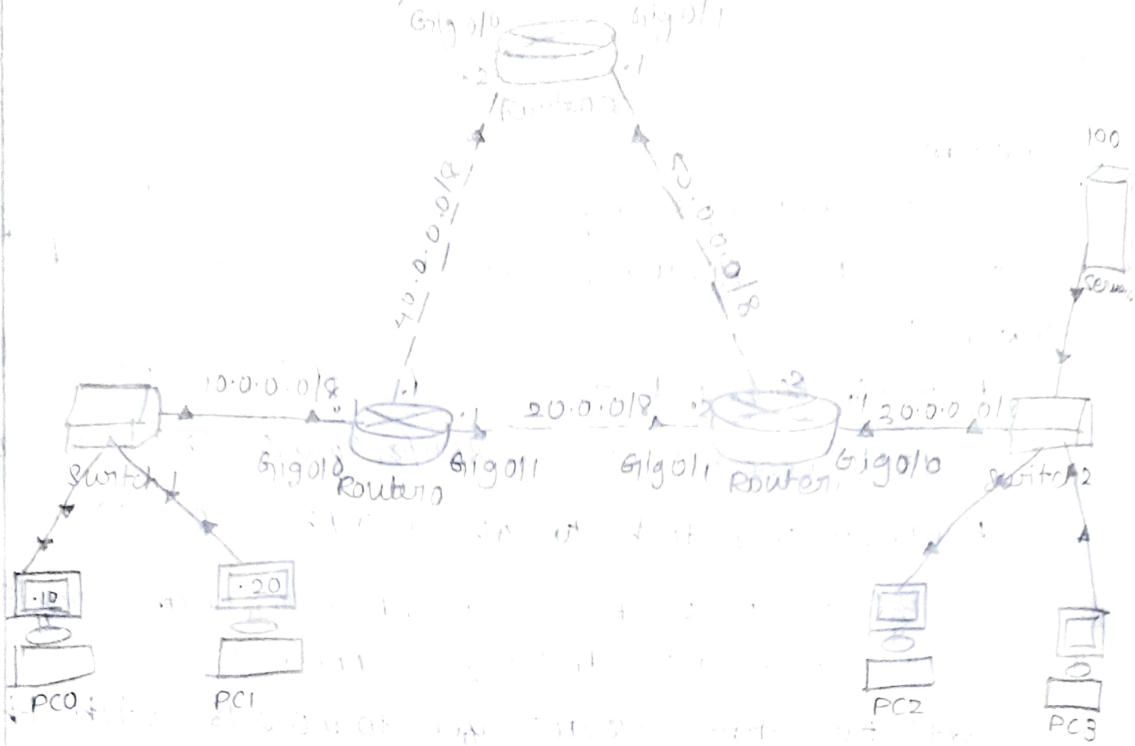
Two static routes for 40.0.0.0/8, main via Router 0, back up via Router 2.

4) Access Router 2 CLI & configure static routes for:

* 10.0.0.0/8
* 30.0.0.0/8

5) Verify the routing table on each router using the command:

Show ip route static



Router	Available Networks on local interfaces	Networks available on other router interfaces
Router0	10.0.0.0/8, 20.0.0.0/8, 40.0.0.0/8	30.0.0.0/8, 50.0.0.0/8
Router1	20.0.0.0/8, 30.0.0.0/8, 50.0.0.0/8	10.0.0.0/8, 40.0.0.0/8
Router2	40.0.0.0/8, 50.0.0.0/8	10.0.0.0/8, 20.0.0.0/8, 30.0.0.0/8

Ensure only main routes appear in the routing table initially.

6) Test connectivity from a PC in the 10.0.0.0/8 network to hosts in the 30.0.0.0/8 & 50.0.0.0/8 networks using ping & tracert commands.

7) Simulate failure of main route by disabling the interface or deleting the static route to Router1 on Router0.

8) Verify that the backup route is now active in the routing table & test connectivity again.

9) Optionally, delete static routes using
no ip route [destination_network] [subnet_mask] [next_hop_address]

Observation:
* Static routes for unreachable networks were successfully added to each router.
* Only routes with lowest administrative distance were shown in the routing table as main routes
* Backup routes automatically took over when the main route failed, ensuring network resiliency
* Host specific routes were preferred over network routes
* Ping & tracert tests confirmed data packets followed the expected paths
* Deleting static routes removed them from the routing table & promoted backup routes if configured.

Result:
Static routes were configured successfully with main & backup paths. Back up routes activated automatically upon main route failure ensuring net connectivity

Device	Interface	IP configuration	Connected with
PC0	Fast ethernet	10.0.0.2/8	Router 0's Fa0/1
Router 0	Fa 0/1	10.0.0.1/8	PC0's fast ethernet
R1	S0/0/0	192.168.1.254/30	Router 2's S0/0/1
R1	S0/0/1	192.168.1.246/30	Router 1's S0/0/0
Router 2	S0/0/0	192.168.1.245	Router 1's S0/0/1
R2	Fa0/2	20.0.0.1/30	PC 1's fast ethernet
PC1	fast ethernet	20.0.0.2/30	R2's Fa0/1

5) Simulate RIP using cisco Packet Tracer.

Assign IP address to PCs

Double click PCs & click desktop menu then & click IP configuration. Assign IP address referring the above table

Assign IP address to interface of routers

Router > enable

Router # configure terminal

Enter configuration commands, one/line

Router (config)#

Do the same for Router 1 & Router 2.

Use same commands to assign IP address on interface for router 2.

Configure RIP routing protocol.

Router 0

Router 0 (config)# router rip

Router 0 (config-router)# network 10.0.0.0

Router 1

Router 1 (config)# router rip

Router 1 (config-router)# network 192.168.1.224

Router 2

Router 2 (config)# router rip

Router 2 (config-router)# network 20.0.0.0

Router 1

PCD [S/D 10.0.0.2] (=) Router [FastEthernet 0/1 -10.0.0.1] (=) Router

Result:

Hence the simulation of RIP using cisco Packet tracer done successfully