Lab 3: Routing Protocols – RIP and OSPF

# Demo Question 1 (RIP):

Configure 2 Routers, 8 PCs into 4 subnetworks and simulate RIP protocol for routing. Check connectivity of all.

Steps:

1. Select 2 routers. One 1841 and one 2811.
2. For each router do the following:
   1. Click on router
   2. Switch it off
   3. Drag and drop WIC-2T to slot0
   4. Switch on
3. Connect 4 2950T switches on the routers, with 2 PCs each
4. Connect the Switches, PCs and Router with “Straight through” cable
5. Connect the two routers using “Serial DTE” cable

Graphical user interface, application

Description automatically generated

1. Click on Router0, and do the following configurations:
   1. Click on router
   2. Click on CLI
   3. Run these commands
      1. enable
      2. config t
      3. interface serial 0/0/0
      4. ip address 10.10.10.1 255.255.255.252
      5. no shutdown
      6. exit
      7. interface fastEthernet 0/0
      8. ip address 192.168.10.1 255.255.255.0
      9. no shutdown
      10. exit
      11. interface fastEthernet 0/1
      12. ip address 192.168.20.1 255.255.255.0
      13. no shutdown
      14. exit
      15. router rip
      16. network 192.168.10.0
      17. network 192.168.20.0
      18. network 10.10.10.0
      19. exit
2. Do the same for the Router1, with different IP addresses
3. Click on simulation -> Add fliters -> Remove all except ICMP and RIP
4. Add PDU packets
5. Run simulation

Graphical user interface, application

Description automatically generated

Graphical user interface, application

Description automatically generated

# Lab exercise Quesiton 1:

Configure 4 Routers and 2 PCs for RIP routing protocol. Show connectivity between all.

Steps:

Select 4 routers. One 1841 and one 2811, and two 2620XM.

1. For each router do the following:
   1. Click on router
   2. Switch it off
   3. Drag and drop WIC-2T to slot0
   4. Switch on
2. Connect the PCs and Router with “Copper cross over” cable
3. Connect the four routers using “Serial DTE” cable

Graphical user interface, application

Description automatically generated

1. Click on Router0, and do the following configurations:
   1. Click on router
   2. Click on CLI
   3. Run these commands
      1. enable
      2. config t
      3. interface serial 0/0/0
      4. ip address 10.10.10.1 255.255.255.252
      5. no shutdown
      6. exit
      7. interface fastEthernet 0/0
      8. ip address 192.168.10.1 255.255.255.0
      9. no shutdown
      10. exit
      11. router rip
      12. network 192.168.10.0
      13. network 10.10.10.0
      14. exit
2. Do the same for all the other routers, with different IP addresses as per their interface.
3. Click on simulation -> Add fliters -> Remove all except ICMP and RIP
4. Add PDU packets
5. Run simulation

Graphical user interface, application

Description automatically generated

# Demo Question 1 (OSPF)

Configure 2 subnetworks, with 3 routers, 4 PCs (2 each), using OSPF routing protocols. Show connectivity between all.

Steps:

Select 4 routers – 2621XM.

1. For each router do the following:
   1. Click on router
   2. Switch it off
   3. Drag and drop WIC-2T to slot0
   4. Switch on
2. Connect the PCs and Router with “Straight Through” cable to the switches and them to routers
3. Connect the four routers using “Serial DTE” cable

Graphical user interface, application

Description automatically generated

1. Click on Router, and do the following configurations:
   1. Click on router
   2. Click on CLI
   3. Run these commands
      1. enable
      2. config t
      3. interface serial 0/0/0
      4. ip address 10.10.10.1 255.255.255.252
      5. no shutdown
      6. exit
      7. interface fastEthernet 0/0
      8. ip address 192.168.10.1 255.255.255.0
      9. no shutdown
      10. exit
      11. router ospf 1
      12. network 192.168.10.0 0.0.0.255 area 0
      13. network 10.10.10.0 0.0.0.3 area 0
      14. exit
2. Do the same for all the other routers, with different IP addresses as per their interface.
3. Click on simulation -> Add fliters -> Remove all except ICMP and RIP
4. Add PDU packets
5. Run simulation

Graphical user interface, application

Description automatically generated

# Demo Question 1 (DHCP):

Configure two routers and 4 subnetworks using 13 PCs. Use one of the routers as DHCP server and the other as a relay agent. Show DHCP IP assignment for the network on server router and the network on relay router.

Steps:

Select 2 routers – 2811.

1. For each router do the following:
   1. Click on router
   2. Switch it off
   3. Drag and drop WIC-2T to slot0
   4. Switch on
2. Connect the PCs and Router with “Straight Through” cable to the switches and them to routers
3. Connect the four routers using “Serial DTE” cable

Graphical user interface

Description automatically generated

1. Click on Router0 and do the following configurations:
   1. Click on router
   2. CLI
   3. Type the following
      1. enable
      2. config t
      3. interface serial 0/0/0
      4. ip address 10.10.10.2 255.255.255.252
      5. no shutdown
      6. exit
      7. interface fastEthernet 0/0
      8. ip address 192.168.10.1 255.255.255.0
      9. no shutdown
      10. exit
      11. ip dhcp excluded-address 192.168.10.1 192.168.10.20
      12. ip dhcp pool MyPool1
      13. network 192.168.10.0 255.255.255.0
      14. default-router 192.168.10.1
      15. dns-server 192.168.10.100
      16. exit
      17. ip dhcp pool MyPool2
      18. network 192.168.30.0 255.255.255.0
      19. default-router 192.168.30.1
      20. dns-server 192.168.10.100
      21. exit
2. For the second Router1, do the following:
   1. Click on router
   2. CLI
   3. Configure the interface IP addresses
   4. Add the following code:
      1. interface fastEthernet 0/0
      2. ip address 192.168.30.1 255.255.255.0
      3. ip helper-address 10.10.10.2
      4. exit
      5. router rip
      6. network 10.10.10.0
      7. network 192.168.30.0
      8. exit
3. Click on any PC -> Desktop -> IP config -> Change IPv4 settings to DHCP

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application

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