Data Communication and Computer Network Laboratory

Master of Computer Application
Second Year, First Semester
Session: 2023-24

Assignment - VIII

Date: 20/09/2023

Packet Tracer is a network simulation tool developed by Cisco that allows users to create and simulate network topologies.

Problem 1: Create basic LAN topologies

(a) Connect two hosts back-to-back with a cross over cable. Assign IP addresses, and see whether they are able to ping each other.

(b) Create a LAN (named LAN-A) with 3 hosts using a hub.

(c) Create a LAN (named LAN-B) with 3 hosts using a switch. Record contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch. Ping each pair of nodes. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

(d) Connect LAN-A and LAN-B by connecting the hub and switch using a cross-over cable. Ping between each pair of hosts of LAN-A and LAN-B. Now record the contents of the ARP Table of end hosts and the MAC Forwarding Table of the switch again.

Problem 2: Set up VLANs and inter-VLAN routing

(a) Create a LAN (named PC-LAB1) with six hosts connected via a layer-2 switch (named PC-LAB1-Switch).

(b) Create two VLANs named "student" and "faculty". Put any three hosts into VLAN "student" and other three into VLAN "faculty"

(c) Create another LAN (named PC-LAB2) with six hosts connected via a layer-2 switch (named PC-LAB2-Switch).

(d) Repeat Experiment 2(b) for PC-LAB2.

(e) Connect the two switches via trunk ports and configure such that students/faculty in PC-LAB1 are able to communicate with students/faculty in PC-LAB2 and vice versa.

Problem 3: Create two LANs and connect them via a router

(a) Create a LAN (named JU-Main) with three hosts connected via a layer-2 switch. Connect the switch to a router. Assign IP addresses to all the hosts and the router interface connected to this LAN from network address 192.168.120.0/24. Configure default gateway of each hosts as the IP address of the interface of the router, which is connected to the LAN.

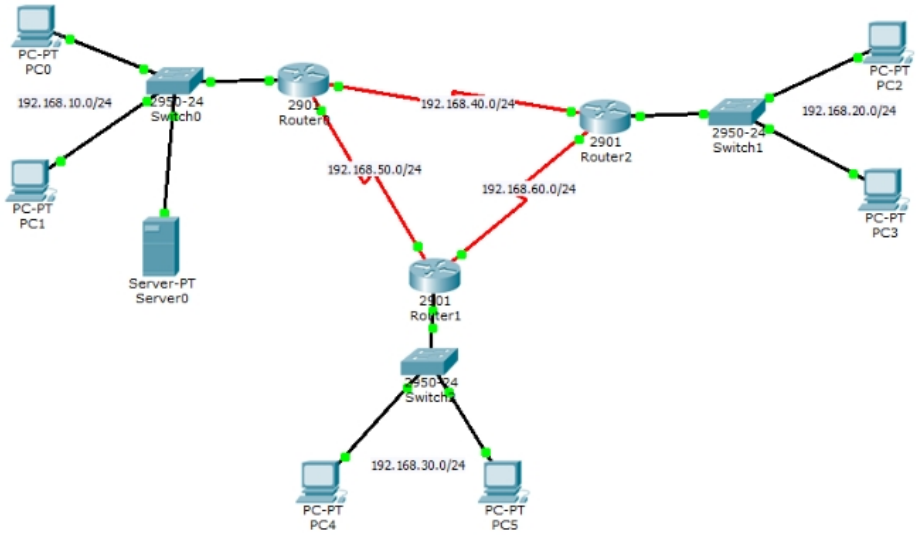
(b) Create another LAN (named JU-SL) with three hosts connected via a layer-2 switch. Connect this switch to another router. Assign IP addresses to all the hosts and the router interface connected to this LAN from network address 192.168.130.0/24. Configure default gateway of each hosts as the IP address of the interface of the router which is connected to the LAN.

(c) Connect the two routers through appropriate WAN interfaces. Assign IP addresses to the WAN interfaces from network 192.168.150.0/24.

(d) Add static route in both of the routers to route packets between two LANs.

(e) Test the configuration by sending ping requests from hosts in each LAN.

Problem 4: Configure dynamic routing using RIP



(a) Create a network topology as shown above.

(b) Configure all the routers to use dynamic routing protocol RIP.

(c) Test your configuration by Mpinging each pair of hosts.

Your report should contain at least the following sections:

1. Problem Statement
2. Your design of the solution
3. Configuration of individual hosts/switches/routers etc.
4. Screen shots of successful run