ACTIVITY 7

WORKSHOP WEEK 7 – ROUTER ON A STICK CONFIGURATION

INTRODUCTION

In this lab exercise, I configured a "Router on a Stick" setup to enable routing between multiple VLANs within a simulated network environment using Cisco Packet Tracer. This method allows for efficient inter-VLAN routing by utilizing a single router with sub-interfaces, thereby reducing the need for multiple router or switch interfaces. The tasks involved assigning IP addresses, creating VLANs, configuring trunking, and setting up the router with sub-interfaces.

NETWORK TOPOLOGY

The network topology for this lab consisted of

One Switch - Responsible for VLAN creation and trunking to the router.

One Router - Configured with sub-interfaces to handle routing between VLANs.

Two PCs - Each connected to a different VLAN to test connectivity.

CONFIGURATION STEPS

Assign IP Addresses and Default Gateways to PCs

I started by configuring the IP addresses and default gateways on the PCs. For PC0, I set the IP address to 192.168.2.2 and the default gateway to 192.168.2.1. For PC1, I assigned the IP address 192.168.3.2 and the default gateway 192.168.3.1. This setup ensures that each PC is in its respective subnet and has the correct gateway for routing traffic.

Create VLANs and Assign Ports to VLANs

Next, I moved on to the switch configuration. I created VLANs and assigned specific ports to these VLANs. I allocated port fa0/5 to VLAN 5 and port fa0/10 to VLAN 10. This segmentation allows for traffic isolation within each VLAN, which is essential for proper network operation.

Configure Trunk Connection Between Router and Switch

To enable communication between VLANs through the router, I configured the switch port connected to the router as a trunk port. This configuration allows multiple VLANs to pass through a single physical link between the switch and the router.

Create Sub-Interfaces on the Router and Configure Routing

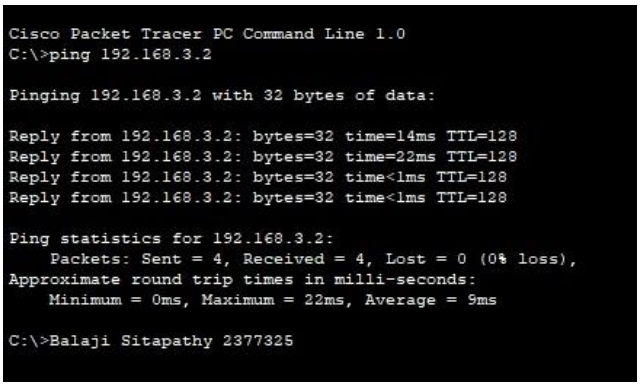
On the router, I created sub-interfaces to handle the routing between the VLANs. I configured two sub-interfaces on the router's physical interface: one for VLAN 5 and another for VLAN 10. Each sub-interface was assigned an IP

address corresponding to the respective VLAN's subnet and configured to use 802.1Q encapsulation to tag the VLAN traffic appropriately.

TESTING AND RESULTS

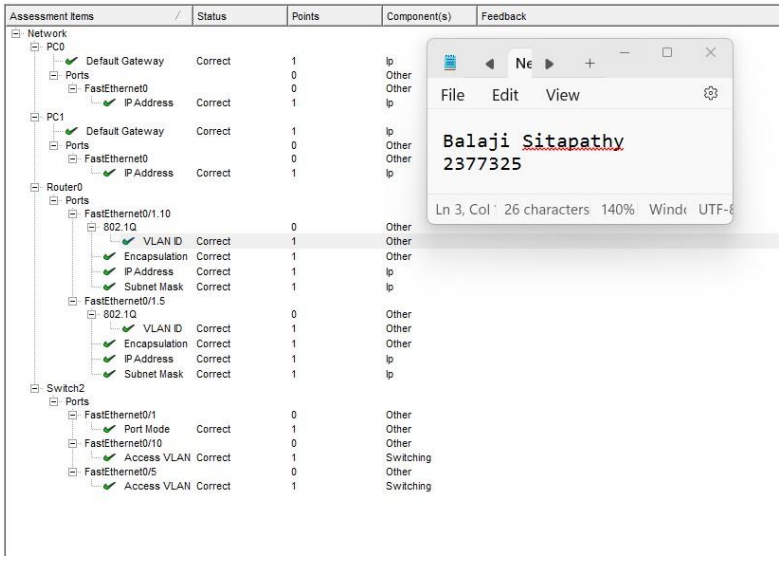
Ping Test Between PCs

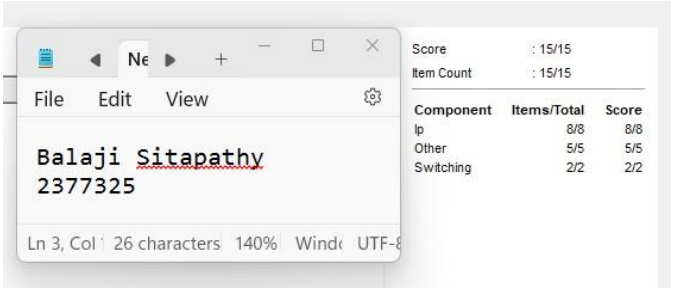
To verify the configuration, I conducted a ping test from PC0 to PC1. The ping test was successful, confirming that PC0 could communicate with PC1 through the router. This result indicates that the inter-VLAN routing is functioning correctly.



Assessment Items Tests Results

I also reviewed the Assessment Items Tests results in Packet Tracer to ensure all configuration tasks were completed correctly. The results showed that all tasks were marked as correct, indicating that the setup was accurate.





CONCLUSION

The "Router on a Stick" configuration was successfully implemented, allowing for effective routing between VLANs within the simulated network. I configured the VLANs, trunking, and router sub-interfaces as required. The connectivity between PCs was verified through successful ping tests, and all assessment tasks were validated.