WIA1005 Lab Task 2 (Week 6 – 5%)

1. OBJECTIVE

In this activity, you will configure two Cisco routers with dual stack (IPv4 and IPv6) and connect them to two switches, each hosting a PC. You will verify IPv4 and IPv6 connectivity across the network, ensuring both intra-LAN and inter-router communication is functional.

2. INSTRUCTIONS

2.1.1 Rack Setup

(a) Router R1 is connected to Switch SW1, which connects to PC1.
(b) Router R2 is connected to Switch SW2, which connects to PC2.
(c) Router R1 and Router R2 are connected via their GigabitEthernet0/1 interfaces.

2.1.2 IP Configuration

(a) IPv4 Addressing

Device	Interface	IPv4 Address	Subnet Mask
PC1	NIC	10.10.1.10	255.255.255.0
PC2	NIC	10.20.1.10	255.255.255.0
R1	G0/0	10.10.1.1	255.255.255.0
R2	G0/0	10.20.1.1	255.255.255.0
R1	G0/1	192.168.1.1	255.255.255.252
R2	G0/1	192.168.1.2	255.255.255.252

(b) IPv6 Addressing

Device	Interface	IPv6 Address	Prefix Length
PC1	NIC	2001:db8:1::10	/64
PC2	NIC	2001:db8:2::10	/64
R1	G0/0	2001:db8:1::1	/64
R2	G0/0	2001:db8:2::1	/64
R1	G0/1	2001:db8:12::1	/64
R2	G0/1	2001:db8:12::2	/64

2.1.3 Router and Switch Configuration

(a) For both R1 and R2, do the following:

a. Enable IPv6 Routing with "*ipv6 unicast-routing*"

b. Assign IPv4 and IPv6 addresses to interfaces G0/0 and G0/1.

c. Configure static routes for IPv4 and IPv6:

On R1:
ip route 10.20.1.0 255.255.255.0 192.168.1.2
ipv6 route 2001:db8:2::/64 2001:db8:12::2

On R2:
ip route 10.10.1.0 255.255.255.0 192.168.1.1
ipv6 route 2001:db8:1::/64 2001:db8:12::1

d. Set hostnames as matrix_number_R1 and matrix_number_R2.

e. Configure login password using your matrix number. Encrypt all passwords.

f. Set MOTD banners:

- R1: This is matrix_number router R1, dual-stack enabled.
- R2: This is matrix_number router R2, dual-stack enabled.

g. Save the configuration.

(b) For both SW1 and SW2, configure the IP address using the last address of the network.

2.1.4 PC Configuration

(a) Manually assign both IPv4 and IPv6 addresses along with their respective gateways (IPv6: use link-local FE80::1 as the default gateway for both networks):

PC	IPv4 Address	IPv6 Address
PC1	10.10.1.10	2001:db8:1::10
PC2	10.20.1.10	2001:db8:2::10

2.1.5 Connectivity Verification:

(a) From PC1, ping PC2 using
   a. IPv4: ping 10.20.1.10
   b. IPv6: ping 2001:db8:2::10

(b) From PC2, ping PC1 using:
   a. IPv4: ping 10.10.1.10
   b. IPv6: ping 2001:db8:1::10

3. Submission Instructions
   (a) Submit the following files:
      a. matrix_number_task2.pkt – The Packet Tracer simulation file.
      b. matrix_number_R1.conf – Router R1 configuration file.
      c. matrix_number_R2.conf – Router R2 configuration file.
      d. Two screenshots showing successful IPv4 and IPv6 pings between PC1 and PC2.

Ver 1.0