**EXPERIMENT 7**

**7. Session Configuration of ARP and Static Routing using Cisco network switch and verify the connectivity.**

To configure ARP and static routing on Cisco switches, especially with a setup involving two switches and multiple PCs across VLANs, follow these steps. This setup will ensure that ARP entries are correctly created and that static routing is correctly configured to enable communication between VLANs.

**Scenario**

* **Switch 1** (Cisco 3560) with VLAN 10
* **Switch 2** (Cisco 3560) with VLAN 20
* **PCs**:
  + **VLAN 10**: PC A1, PC A2
  + **VLAN 20**: PC B1, PC B2

**Network Topology**

1. **Switch 1 (VLAN 10)**:
   * **PC A1**: 192.168.10.2
   * **PC A2**: 192.168.10.3
   * **VLAN 10 IP**: 192.168.10.1
2. **Switch 2 (VLAN 20)**:
   * **PC B1**: 192.168.20.2
   * **PC B2**: 192.168.20.3
   * **VLAN 20 IP**: 192.168.20.1
3. **Trunk Link** between Switch 1 and Switch 2

**Step 1: Configure VLANs and Assign IP Addresses**

**On Switch 1:**

1. **Enter global configuration mode:**

enable

configure terminal

1. **Create VLAN 10 and assign it to ports:**

vlan 10

name Network\_A

exit

interface range fastethernet 0/1 - 2

switchport mode access

switchport access vlan 10

no shutdown

exit

1. **Configure the VLAN 10 interface with an IP address:**

interface vlan 10

ip address 192.168.10.1 255.255.255.0

no shutdown

exit

1. **Configure trunk port to Switch 2:**

interface fastethernet 0/24

switchport mode trunk

switchport trunk allowed vlan 10,20

no shutdown

exit

**On Switch 2:**

1. **Enter global configuration mode:**

enable

configure terminal

1. **Create VLAN 20 and assign it to ports:**

vlan 20

name Network\_B

exit

interface range fastethernet 0/1 - 2

switchport mode access

switchport access vlan 20

no shutdown

exit

1. **Configure the VLAN 20 interface with an IP address:**

interface vlan 20

ip address 192.168.20.1 255.255.255.0

no shutdown

exit

1. **Configure trunk port to Switch 1:**

interface fastethernet 0/24

switchport mode trunk

switchport trunk allowed vlan 10,20

no shutdown

exit

**Step 2: Enable IP Routing**

1. **Enable IP routing on both switches:**

**On Switch 1 and Switch 2:**

ip routing

**Step 3: Configure Static Routing (if necessary)**

For this scenario, routing between VLANs on the same Layer 3 switch is handled internally, so static routes aren't necessary unless you need to route traffic to an external network. However, if you are configuring routing to another network or router, you would add static routes like this:

ip route [destination\_network] [subnet\_mask] [next\_hop\_address]

**Step 4: Configure ARP**

ARP (Address Resolution Protocol) is used to map IP addresses to MAC addresses. Cisco switches handle ARP automatically. However, you can manually add ARP entries if needed:

1. **Add ARP entry:**

**On Switch 1:**

arp 192.168.20.2 00:11:22:33:44:55

**On Switch 2:**

arp 192.168.10.2 00:66:77:88:99:AA

* + Replace 00:11:22:33:44:55 and 00:66:77:88:99:AA with the actual MAC addresses of the corresponding devices.

**Step 5: Configure IP Addresses on the PCs**

1. **On PC A1:**
   * **IP Address:** 192.168.10.2
   * **Subnet Mask:** 255.255.255.0
   * **Default Gateway:** 192.168.10.1
2. **On PC A2:**
   * **IP Address:** 192.168.10.3
   * **Subnet Mask:** 255.255.255.0
   * **Default Gateway:** 192.168.10.1
3. **On PC B1:**
   * **IP Address:** 192.168.20.2
   * **Subnet Mask:** 255.255.255.0
   * **Default Gateway:** 192.168.20.1
4. **On PC B2:**
   * **IP Address:** 192.168.20.3
   * **Subnet Mask:** 255.255.255.0
   * **Default Gateway:** 192.168.20.1

**Step 6: Verify Configuration and Connectivity**

1. **Ping from PC A1 to PC B1:**

ping 192.168.20.2

1. **Check ARP Table on Switches:**

show ip arp

1. **Check Routing Table on Switches:**

show ip route

