Lab: Troubleshooting IP Configuration Issues in a Small Network

Objectives

1. Set up a small network with three PCs and a switch.
2. Assign IP addresses carefully, considering subnet rules.
3. Troubleshoot connectivity issues using ping and arp -a.

Scenario

A company wants a simple LAN with three PCs connected to a switch. However, during setup, the network administrator made some mistakes in IP addressing. Your task is to **fix the IP configuration and verify connectivity**.

Step 1: Set Up the Network Topology

1. Open **Packet Tracer**.
2. **Add Devices**:
    - Three generic PCs (PC0, PC1, PC2).
    - One Cisco 2950T switch.
3. **Connect Devices**:
    - Use **straight-through cables** to connect:
        - PC0 → Fa0/1 on Switch
        - PC1 → Fa0/2 on Switch
        - PC2 → Fa0/3 on Switch

Step 2: Assign IP Addresses (with Errors)

The administrator assigned the following IPs:

- **PC0**: 192.168.5.10, **Subnet Mask**: 255.255.255.0
- **PC1**: 192.168.5.300, **Subnet Mask**: 255.255.255.0
- **PC2**: 192.168.5.12, **Subnet Mask**: 255.0.0.0

Task: Identify and fix the issues in the given IP addresses.

Step 3: Verify Connectivity

1. **From PC0, ping PC1 and PC2**:
    - Open the **Command Prompt**.
    - Run:

        ping 192.168.5.300

        ping 192.168.5.12
    - Observe the output.
2. **View the ARP Table** on PC0:
    - Run:

        arp -a
    - Check if the correct MAC addresses appear.

Step 4: Fix the Issues

- Correct the **invalid IP address on PC1**.
- Ensure all PCs use the **same subnet mask**.
- Retest the ping and arp -a commands.

Bonus Challenge

Without using the ping command, how can you confirm that PC1 and PC2 are reachable?