Basic Network Configuration with CISCO Packet Tracer

Step 1: Add Devices

- Add four PCs.
- Add two switches.
- Add one router.

Step 2: Connect Devices

- Connect each PC to a switch using a copper straight cable.
- Connect the switches to the router using a higher capacity cable.

Step 3: Configure the Router

1. Click on the router to open the CLI (Command Line Interface).
2. In user mode, type **no** and press the Enter key.
3. Enter privileged mode by typing **enable** and pressing Enter.
4. Enter global configuration mode by typing **configure terminal** and pressing Enter.

Step 4: Configure Interfaces

- **Interface g0/0**:
    1. Type **interface g0/0** and press Enter.
    2. Type **ip address 192.168.1.1 255.255.255.0** and press Enter.
    3. Type **no shutdown** and press Enter.
    4. Type **exit** and press Enter.

- **Interface g0/1**:

1. Type **interface g0/1** and press Enter.
2. Type **ip address 192.168.2.1 255.255.255.0** and press Enter.
3. Type **no shutdown** and press Enter.

Step 5: Configure PCs

Configure each PC with the following network settings:

- **PC1**:
    - **IP Address**: 192.168.1.10
    - **Subnet Mask**: 255.255.255.0
    - **Default Gateway**: 192.168.1.1
    - **DNS Server**: 0.0.0.0
- **PC2**:
    - **IP Address**: 192.168.1.11
    - **Subnet Mask**: 255.255.255.0
    - **Default Gateway**: 192.168.1.1
    - **DNS Server**: 0.0.0.0

- **PC3**:
  - **IP Address**: 192.168.2.10
  - **Subnet Mask**: 255.255.255.0
  - **Default Gateway**: 192.168.2.1
  - **DNS Server**: 0.0.0.0
- **PC4**:
  - **IP Address**: 192.168.2.11
  - **Subnet Mask**: 255.255.255.0
  - **Default Gateway**: 192.168.2.1
  - **DNS Server**: 0.0.0.0

Step 6: Verify Connectivity

After configuring the PCs, send a simple PDU (Protocol Data Unit) message from each PC to verify connectivity. Check that the message transmission is successful for each device.

Networking Commands

The below mentioned commands are some of the most useful commands required to troubleshoot network problems and configure network settings.

1. IPCONFIG

The IPCONFIG network command provides a comprehensive view of information regarding the IP address configuration of the device we are currently working on.

The IPConfig command also provides us with some variation in the primary command that targets specific system settings or data, which are:

- IPConfig/all - Provides primary output with additional information about network adapters.
- IPConfig/renew - Used to renew the system's IP address.
- IPConfig/release - Removes the system's current IP address.

Command to enter in Prompt - **ipconfig**

2. NSLOOKUP

The NSLOOKUP command is used to troubleshoot network connectivity issues in the system. Using the nslookup command, we can access the information related to our system's DNS server, i.e., domain name and IP address.

Command to enter in Prompt - **nslookup**

3. HOSTNAME

The HOSTNAME command displays the hostname of the system. The hostname command is much easier to use than going into the system settings to search for it.

Command to enter in Prompt - **hostname**

4. PING

The Ping command is one of the most widely used commands in the prompt tool, as it allows the user to check the connectivity of our system to another host.

Command to enter in Prompt - **ping** www.facebook.com

5. TRACERT

The TRACERT command is used to trace the route during the transmission of the data packet over to the destination host and also provides us with the "hop" count during transmission.

Command to enter in Prompt- **tracert** IP-address OR **tracert** www.google.com

6. NETSTAT

The Netstat command as the name suggests displays an overview of all the network connections in the device.

Command to enter in Prompt – **netstat**

7. ARP(Address Resolution Protocol)

The ARP command is used to access the mapping structure of IP addresses to the MAC address. This provides us with a better understanding of the transmission of packets in the network channel.

Command to enter in Prompt - **arp**

8. SYSTEMINFO

Using the SYSTEMINFO command, we can access the system's hardware and software details, such as processor data, booting data, Windows version, etc.

Command to enter in Prompt - **systeminfo**