Lab-1 Report: Introduction to Packet Tracer, Peer-to-Peer Communication, and Study of Network Cables

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Aim:

The primary aim of this lab is to familiarize students with Cisco Packet Tracer, set up a peer-to-peer communication network, and study different types of network cables along with their color codes.

Objectives:

1. Understand the basics of using Cisco Packet Tracer.
2. Set up and test a basic peer-to-peer (P2P) network configuration.
3. Research and document the different types of network cables and their color codes.
4. Document the entire process, save the network configuration, and submit the results.

Brief Overview of the Lab Objectives:

1. Familiarization with Cisco Packet Tracer:
   - ◯ IntroducestudentstoCiscoPacketTracer,anetworksimulation tool for designing and configuring network topologies.
   - ◯ Exploretheinterfaceandavailabletoolstobuildconfidencefor future networking tasks.
2. Peer-to-Peer Communication Setup:
   - ◯ SetupabasicP2Pnetworkbyconnectingtwo PCsdirectly using a copper straight-through cable.
   - ◯ Understandthefundamentalsofdirectdevicecommunication and IP address configuration.
3. Study of Network Cables and Color Codes:

- Researchdifferenttypesofnetworkcables,includingcopper straight-through, copper crossover, and fiber optic cables.
- Learnthepurposeandusageofeachcabletype,alongwith their color codes.

4. Documentation and Submission:
   - Documentthenetworksetupprocess,observations,and findings in a detailed report.
   - Save the network configuration in a Packet Tracer project file and submit the work through a GitHub repository.

Steps Taken to Set Up the Network:

1. Creating a New Network in Cisco Packet Tracer:
   - OpenCiscoPacketTracer.
   - Create a new project by selecting “File” > “New” to start a blank workspace.
2. Adding Two PCs to the Workspace:
   - Add PC0: DraganddropthefirstPC(PC0)ontotheworkspace from the “End Devices” category.
   - Add PC1: Similarly,draganddropasecondPC(PC1)ontothe workspace.
3. Connecting the PCs Using a Copper Straight-Through Cable:
   - Selectthe“CopperStraight-Through”cablefromthe “Connections” category.
   - ConnectPC0toPC1byselectingtheFastEthernet0porton each PC.
4. Assigning IP Addresses to the PCs:
   - Configure PC0: SetIPaddressto192.168.1.1andSubnet Mask to 255.255.255.0.
   - Configure PC1: SetIPaddressto192.168.1.2andSubnet Mask to 255.255.255.0.
5. Testing the Connection with a Ping Command:
   - Ping from PC0 to PC1: UsetheCommandPromptonPC0to ping 192.168.1.2 and verify successful replies.

Detailed Information on Network Cables and Their Color Codes:

1. Copper Straight-Through Cable:
    - Description: Usedtoconnectdifferenttypesofdevices,such as a PC to a switch or a switch to a router.
    - Color Codes (TIA/EIA-568A):
        - Pin1:White/Green
        - Pin2:Green
        - Pin3:White/Orange
        - Pin4:Blue
        - Pin5:White/Blue
        - Pin6:Orange
        - Pin7:White/Brown
        - Pin8:Brown
2. Copper Crossover Cable:
    - Description: Connectssimilardevicesdirectly,suchasPCto PC or switch to switch.
    - Color Codes:
        - One End (TIA/EIA-568A):
            - Pin1:White/Green
            - Pin2:Green
            - Pin3:White/Orange
            - Pin6:Orange
        - Other End (TIA/EIA-568B):
            - Pin1:White/Orange
            - Pin2:Orange
            - Pin3:White/Green
            - Pin6:Green
3. Fiber Optic Cable:
    - Description: Transmitsdataaslightpulsesthroughglassor plastic fibers, ideal for high-speed and long-distance communication.
    - Types:

- Single-Mode Fiber (SMF): For long-distance communication.
- Multi-ModeFiber(MMF):Forshorterdistances.

○ Purpose:Usedforhigh-speeddatatransmissionoverlong distances and in environments with electromagnetic interference.