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COMPUTER NETWORKS LAB

CISCO Packet Tracer

Packet tracer is a medium fidelity, network-capable, simulation-based learning environment for beginners to design, configure and troubleshoot computer networks at a CCNA-level of complexity.

It is an integrated simulation, visualization, collaboration and assessment environment. It relies on simplified model of networking devices and protocols. It was created to help address the Digital divide in networking education. It includes items such as Protocols (LAN, Switching, TCP/IP, WAN, Routing, Security and QoS), Logical Workspace, Physical workspace, Realtime Mode, Simulation mode, Local Authoring and Sharing.

Packet tracer is helpful for students to understand CCNA topics, build models and ask "what if" questions. It can be used for group work, Class Work, Case Studies, Problem Solving etc.

Packet Tracer Demonstration

The demonstration was done in Logical workspace. The interface overview was given, which included Menu Bar, Main Tool Bar, Common Tools Bar, Realtime Bar, Network Component box, Device-Type Selection Box,

Device Specific Selection Box & User Created Packet windows.

- Creating a basic Network.

→ From the device-type selection box, we select a generic end device and drag it to the work space. We select another generic end device and do the same.

→ Upon left-clicking on 1 end devices, we select Config tab in panel. Then we select FastEthernet 0 option. We enter the IP address 10.0.0.1 and the Subnet mask is filled automatically with 255.0.0.0. We close the panel.

→ We follow the same procedure for the second end device and give IP address 10.0.0.2.

→ Now we select the Connections icon from device-type selection box. We join/connect the 2 end devices by touching 1 device and dragging it to the other. (Dotted line) Copper (roll-over is selected.

→ We switch to Simulation mode and click on Auto Capture/Play option in Play Controls panel. In the Events list we can view time taken to deliver packets from 1 device to another. We must add simple PDU's to both the end devices.

→ We left click on the 1st end device & select desktop option then we click on command prompt. We enter ping 10.0.0.2 (IP address of other end device).

→ We see that the packets were sent successfully 0% loss. Ping statistics gives us Minimum, Maximum & Average Round trip time. (No. of Bytes & TTL).

Hubs Switches & Routers

1. Hub: It is a connector that connects wires from different sides. No signal processing / regeneration. It is a device that operates only on physical layers of the OSI model. Used in LAN. eg) Hub - PT (Ten ports provided)

2. Switch: Switch is a point to point communication device. It operates at data link layer of OSI model. It uses a switching table to find correct destination. OSI - Open Systems Interconnection (Used for multiple devices of nearby networks).

3. Router: They are multi-port devices and are more sophisticated. Routing table is used to determine which path should be used between source and destination for best transmission. It is essential in wide Area networks and Metropolitan Area Networks. Network layer device.