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Sec:

1. Open the HubHeirarchydemo2.pkt file and notice that in the top network all the PCs are linked by hubs while the lower network switches are used to do the same job.

2. Notice that the hub network is up and running immediately while the switch
a. network takes time to go live (green lights)

3. Wait until the lower network goes live and switch to simulation mode.

4. Run the sample simulation using Capture and Forward. This time just watch what happens as the packets travel across switches.

5. Using the inspect tool (magnifying glass on right hand side)

Take note of what is available to view and list some of the contents of these tables contrast the contents across the path of the simulation and on devices that were not affected by the transmission [Ensure you understand what the various tables are]

- PC : [ARP table, Port status summary table](#)

- Switch : [Mac table, QOS queues](#)

- Router : [Routing table, IPV6 routing table](#)

- Hub : [Nothing](#)

6. Place packet (yellow envelope) to be transferred from PC 0 (top left) to PC 119 (bottom Right).

7. Using Capture and Forward watch the progress and answer the following

a. When the packet hits hub0, is the packet replicated and sent out to every device attached to that hub (3 PCs and Hub5)?

[Yes](#)

b. The three PCs reject the packet as not destined for them. True/False?

[True](#)

c. When the packet hits Hub5, is it replicated and sent out to every device attached (hub1,2,3,4 and router0)? [Yes](#)

- d. When the packet hits the other hubs they in turn replicate the packet to all **True**
- e. The packet passes over the serial network connection between the routers (internet) **True**
- f. When the packet hits Switch5 it is sent on only to Switch4 (ie switch made a decision on what to pass on where) **True**
- g. The packet is passed through switch4 to PC119 without being sent to the other PCs **True**
- h. The return packet makes progress until it hits Hub5 when it is again replicated to all the other hubs. **True**
- i. These hubs then replicate them to all PCs (even though only one is targeted!) **True**
- j. How many packets are replicated across the hubs on the way to the destination? How many node rejections does this require in order to deliver the packet to the correct node? What about on the way back from the destination to the original source?
23 packets are replicated across the hubs. Rejected all PCs that connected to hub. On the way back it rejected 25 in total and also rejected all nodes except the PC0

8. Try some other simulations for packet delivery.

From PC11 to PC105, start from PC11 to Hub 2 when hit sent to hub 5 and other 3 pcs belong to hub 2

From hub 5 to router 0 then router 1 and switch 5, replicated to all hubs 0,1,2,3,4 and all pcs are connected. the way back from PC105 to switch 1 to switch 5 then router 1 and router 0, after that to hub 5 and replicated to all hubs 0,1,2,3,4 and all Pcs are connected to hubs ,all envelopes are rejected except PC11

Based on this exercise, what have you assessed as the difference between Hubs, Switches and Routers? Where are each best suited to be used and on what OSI or UNIX layer do they work on?

ANSWER:

Router is device to forwards data packets along networks.

Switch is a device that filters and forwards packets between LAN segments.

Hub is a common connection point for devices in a network.