CSCI466 HW4

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1 Why is an ARP query sent within a broadcast frame? Why is an ARP response sent within a frame with a specific destination MAC address?

ARP queries are sent within a frame because the host needs the IP address and the MAC address

2 Consider the above campus network.

2.1 Suppose that all links are 100 Mbps full duplex. What is the maximum total aggregate throughput that can be achieved among the 9 hosts and 2 servers in this network? You can assume that any host or server can send to any other host or server.

11 x 100 = 1100 Mbps

2.2 Suppose the three departmental switches are now hubs. All links are 100 Mbps. What is the total aggregate throughput now?

5 x 100 = 500 Mbps

2.3 Suppose that all the switches are replaced by hubs. All links are 100 Mbps. What is the total aggregate throughput?

100 Mbps

3

3.1 What are the differences between the following types of wireless channel impairments: path loss, multipath propagation, interference from other sources?

Path Loss: When signals travel long distances it loses its power, like a water ripple.
Multipath Propagation: When signals reach the tower via multiple paths.
Interference: When signals on the same wavelength or frequency and interrupt on another.

3.2 As a mobile node gets farther and farther away from a base station, what are two actions that a base station could take to ensure that the loss probability of a transmitted frame does not increase?

You could either increase the transmission power or decrease the transmission rate to insure that all frame loss probability does not increase.

4 In mobile IP, what effect will mobility have on end-to-end delays of datagrams between the source and destination? Describe different sources of delay.

In mobile IP, there is more information in datagrams that needs to be sent from node to node then there is in direct routing, which ultimately will lead to more delay.