CSE421

Lab-02

Homework Questions on

*HTTP, ARP, TCP, Email and DNS*

1. What is the main difference between HTTP and TCP requests?

**Ans**- HTTP request has Domain name for which it needs IP address. TCP request

Create a secure connection for that HTTP request.

1. By checking which section of a TCP packet one can identify if it is a TCP packet for opening the connection or for sending data segments? Explain how?

**Ans**- By check the flags of a TCP packet one can identify . If it is SYN then TCP packet for opening the connection. If it indicates PSH then it is for sending data segments.

1. How can you get the MAC address of a host?

**Ans**- I can get MAC address of a hos using ARP(Address Resolution Protocol).

1. Suppose, you want to access [www.bracu.ac.bd](http://www.bracu.ac.bd) and your PC does not know the IP address of this website. What are the steps to get the IP address of this webserver?

**Ans**- My pc will send a ARP request to find the mac address of Local DNS server. Then after getting the mac address of DNS server My pc will send a DNS request to the DNS server for the IP address of bracu web server. So in response the DNS server will give the IP address of this webserver.

1. After establishing a connection with the local DNS server PC1 now knows the IP and MAC addresses of PC2. Suppose PC1 [IP Address: 192.168.2.1, MAC Address: 0010.1191.A946] is sending an ARP packet to PC2 [IP Address: 192.168.2.2, MAC Address: 0110.1290.AD23]. What will be written in the target MAC address before the packet reaches PC2.

**Ans**- As ARP used to get the mac address of any device but here PC1 knows the PC2’s mac address so PC1 is searching for another device Using IP address. So the MAC address will be 0000.0000.0000.

1. How can you tell the difference between an ARP request packet and an ARP reply packet as the Ethernet type field on both packets is identical?

**Ans**- For ARP request packet the target MAC address will be 0 but ARP reply packet will have a valid MAC address as Its gives the MAC address of desired device.

1. If the flag section of the TCP packet contains 000100, what type of TCP packet will that be?

**Ans**- If the flag section of the TCP packet contains 000100, it means RST(**Reset)**

1. How many TCP packets does the Client PC send to the server in the process of an HTTP request?

**Ans**- The Client PC send two TCP packets to the server in the process of an HTTP request.

1. Why does email need both SMTP and POP3 protocols? And how do they work together?

**Ans**- SMTP protocol is used to communicate to the webserver. It is used for authenticating and direct transfer. POP3 is used for retrieving email from email server. When user send an email SMTP is used and then User receive an email POP3 is used.

1. In a TCP packet coming back from the server, the sequence number is written as 200 and the acknowledgement is written as 150. What do you understand from this scenario? Explain.

**Ans**- the sequence number is written as 200, means the server received a TCP packet previously with an acknowledgment of 200. And the acknowledgement number is 150 that means sequence number of the next TCP packet’s byte will be 150 that the server wants to receive.

1. Why is it necessary to map an IP address to a MAC address? Why can't the IP address be used to represent the MAC address?

**Ans**- IP address is the final destination so it is necessary to map an Ip address to a Mac address. Mac address will be change from device to device but IP will not be change as it’s the final destination. By IP address sender can know where to go but it does not know the path. So My mac address it goes to IP address. So the IP address can not be used to represent the MAC address.

1. In an outbound PDU packet, what does source port: 51225 and destination port: 80 mean?

**Ans**- The PDU packet was created in the source port: 51255 and receiver port address will be destination port: 80

1. How does your laptop know it’s local DNS server’s IP and MAC address?

**Ans**- My laptop know the local DNS server’s IP as I use the internet connection and the MAC address of Local DNS server is saved in the cache.

1. Why are TCP requests sent before sending an email?

**Ans**- TCP request sent to establish a secure connection so that there will a connection control and all email message will be delivered perfectly.

1. ARP is performed in which layer of TCP/IP model?

**Ans**- ARP is performed in Network Access Layer.