Lab1 Report

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Opened the ** interface in wireshark and protocols traced were following:**

- **SSDP**: Simple Service Discovery Protocol -> it is a network protocol based on the Internet protocol suite for advertisement and discovery of network services and presence information
- **ICMP**: Internet Control Message Protocol-> **ICMP** is a supporting protocol in the Internet protocol suite. It is used by network devices, including routers, to send error messages and operational information indicating success or failure when communicating with another IP address
- **ARP**: Address resolution Protocol ->The Address Resolution Protocol is a communication protocol used for discovering the link layer address, such as a MAC address, associated with a given internet layer address, typically an IPv4 address.
- **DNS**: Domain Name system -> DNS translates human readable domain names (for example, www.amazon.com) to machine readable IP addresses (for example, 192.0.2.44).
- **TCP**: Transmission Control protocol ->It is a connection-oriented protocol for communications that helps in the exchange of messages between different devices over a network.
- **TLS**: Transport Layer Security ->TLS is a cryptographic protocol designed to provide communications security over a computer network

I Sent request to 3 websites using HTTP and capture the packets using Wireshark as mentioned below

Website	Source IP	Destination IP	Source MAC	Destination MAC
http://www.example.com	172.22.45.7	93.184.216.34	08:00:27:cb:7e:f5	00:15:5d:59:c7:03
http://www.jaduniv.edu.in	172.22.45.7	136.232.79.162	08:00:27:cb:7e:f5	00:15:5d:59:c7:03
http://www.roughlydrafted.com	172.22.45.7	45.55.58.72	08:00:27:cb:7e:f5	00:15:5d:59:c7:03
http://web.archive.org	172.22.45.7	207.241.237.3	08:00:27:cb:7e:f5	00:15:5d:59:c7:03

We have noticed that all the websites that we have sent GET requests have the same source IP address, Different Destination IP Address , same source MAC address, same destination MAC address. Reason the same is mentioned as follows

- *Same source IP address*: Because the request is sent from the same address or source which is IP address of my Laptop in the current network
- *Different IP address*: Because the request is sent to different addresses having different websites have different ip addresses also it is source to destination protocol.
- *Same source MAC address*: Because the request is sent from the same physical device containing the same NIC having a fixed MAC address.
- *Same destination MAC address*: Because the MAC layer uses hop to hop protocol. so all the requests sent to different websites are first sent to the next hop connected to my network interface card which may be the access point of the wifi router so the destination mac address becomes the address of the next hop always.

Website	Http response code	RTT for http 200	Http response code after reloading	RTT after reloading	Transport layer protocol (tcp/udp)	Source(client) port	Destination (server) port
http://www.example.com	200 ok	0.543665463	304 not modified	0.227996837	TCP	41010	80
http://www.jaduniv.edu.in	200 ok	2.693430646	404	0.053492501	TCP	35640	80
http://www.roughlydrafted.com	200 ok	0.449966139	200 ok	0.402523232	TCP	58818	80
http://web.archive.org	200 ok	0.998223257	Continuation	0.454898362	TCP	42416	80

Now I have printed the packets here corresponding to HTTP GET and Response for the website http://www.roughlydrafted.com and highlighted the IP and MAC address.

Get Request

```
Unset
No. Time Source Destination Protocol Length Info
26 1.6520506 172.22.45.7 45.55.58.72 HTTP 412 GET/HTTP/1.1

Frame 26: 412 bytes on wire (3296 bits), 412 bytes captured (3296 bits)
on interface eth0, id 0
Ethernet II, Src: PcsCompu_cb:7e:f5 (08:00:27:cb:7e:f5), Dst:
Microsof_9b:58:5c (00:15:5d:9b:58:5c)
Internet Protocol Version 4, Src: 172.22.45.7, Dst: 45.55.58.72
Transmission Control Protocol, Src Port: 45496, Dst Port: 80, Seq: 1,
Ack: 1, Len: 346
Hypertext Transfer Protocol
```

Response:

```
Unset
No. Time Source Destination Protocol Length Info
30 2.0978001 45.55.58.72 172.22.45.7 HTTP 1057 HTTP/1.1 200 OK
(text/html)

Frame 30: 1057 bytes on wire (8456 bits), 1057 bytes captured (8456
bits) on interface eth0, id 0
Ethernet II, Src: Microsof_9b:58:5c (00:15:5d:9b:58:5c), Dst:
PcsCompu_cb:7e:f5 (08:00:27:cb:7e:f5)
Internet Protocol Version 4, Src: 45.55.58.72, Dst: 172.22.45.7
Transmission Control Protocol, Src Port: 80, Dst Port: 45496, Seq:
1355, Ack: 347, Len: 991
[2 Reassembled TCP Segments (2345 bytes): #28(1354), #30(991)]
Hypertext Transfer Protocol
Line-based text data: text/html (87 lines) ```
```