**JOURNEY OF A PACKET……**

**What is a packet?**

Over the internet data is sent using packets. To explain packets it can be compared to an envelope where the letter is the data to be sent while the source and the destination address is written on the envelope.

Talking about source and destination address, how are computers and mobile devices identified over the network? The answer is MAC and IP address. We need two different addresses? why? Consider MAC address to be your Passport number and IP address to be your name. In this case Passport number can uniquely identify any person al over the world, but at the same time, giving out your passport number is not safe for privacy reasons, but telling someone name is fine. Also, your name can be common among many people, but as long as these people are not in the same room or the same group, no problem. Similarly, MAC address is a worldwide unique ID that can identify a network card, which is attached to laptops and computers, and is the primary device through which devices can access a network.

IP address are aliases for computers over a network to identify computers without revealing the security important MAC address. Furthermore, IP address, since can be assigned to devices, provide an useful concept called subletting wherein a particular group have a portion of the IP address same for simplification. But how are IP address assigned?

There are 2 methods of assignment, **static** and **dynamic.** A static IP is assigned to a device on a computer doesn't change over the time i.e. the IP remains same whenever a device connects to the network. Incase of dynamic IP, the IP changes at regular intervals. But who administers this IP assignment over a network? Here comes the DHCP(Dynamic Host Configuration Protocol). Usually DHCP is located at the server of the network, WiFi hubs. It can be configured to assign IP statically dynamically, assigning interval and much more

How to check you IP and MAC address?

**ifconfig**

If you want to see if you are connected to the internet, or connected to a device on the network, use ping with the IP address of a device

**ping [google.com](http://google.com)**

OR

**ping 192.168.0.1**

**<<<<<<<<<<<<<ARP SCAN HERE>>>>>>>>>>>>>>>>**

Aren’t the IP address cumbersome to remember? Humans remember names pretty easily compared to numbers. DNS server or Domain Name Servers are used for this purpose. A DNS server stores mapping of IP address to domain names. e.g. [www.google.com](http://www.google.com). This DNS server stores info about the IP address, which is can seen using the command:

**dig <domain name>**

Q> how to see if u r connected

arp-scan command

sudo arp-scan —interface=wlan0 —localnet

**DHCP:** IP address? static and dynamic

**DNS:** IP confusing? Domain Names for the IP addresses

public and private IP addresses

nslookup, host, whois, dig

DNS details stored at /etc/resolv.conf

ping

traceroute

mtr- combo of ping and traceroute

finger?