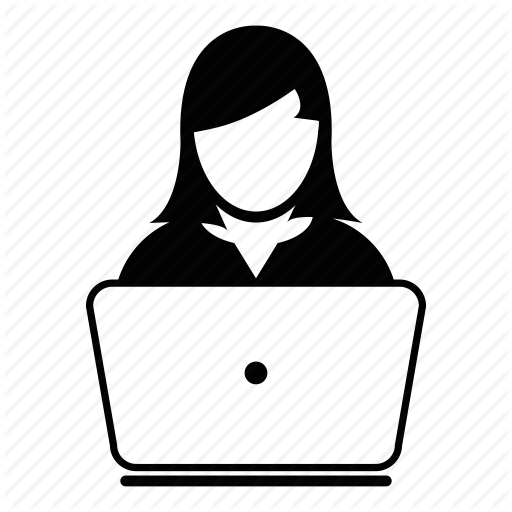
Daliah Aljutayli

**Basic of Network:  
•What is IP address and why we need one?**

IP (Internet Protocol) Address: is a unique serial of numbers which work as your computer identity inside internet space [1].

(The IP address locates my device location, when the receiving provider, the internet knows me by it.).



These numbers divide into **four sets** separated with a **comma (Dot)**

**IP:192.168.1.1**

Each **set** contains numbers from 0 to 255, which translate onto **zeros** and **ones**.

The IP address is a 32-bit, available only to **4 million addresses**

”IP4->IP6=>Solved By NAT”

**Locat** you devise address to **send** to and **receive** from the internet

**•How the command "ping" works? Why it is important?**

Sending a information in packet to a specific IP address (acts as a **test** to device **reachability**) and then listens for a **reply** (if it **Responds** or Not).

**•What is subnet mask?** [2]

Subnet mask: it divides the IP address into Network and Host addresses.

(When have a similar IP addresses “Home Network”)

IP address : **172** . 31 . 1 . 2

**First-Octet Rule:**

172 its between 128 &191

So -> **Class B address**

**Classful Network Masks of Class B:**

**Network Portion:** first & second octets.

**Host Portion:** third & fourth octets

Setting all bits to a 1 in the network portion and all to 0 in the host portion.

A **Class B network mask** is shown as **255.255.0.0**

**Subnet Mask:** change the first host portion into 1’s

So -> **IP Subnet Mask:** 255.255.**255**.0

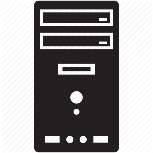
**•What is DNS?**

|  |  |
| --- | --- |
| **D**  **N**  **S** | stands for **D**omain **N**ame **S**ystem |
| Translate the name which user enter in the search engine (e.g. www.google.com) into numbers IP (e.g. 74.125.224.72) |

**DHCP:  
•What is DHCP?**

|  |  |
| --- | --- |
| **D**  **H**  **C**  **P** | stands for **D**ynamic **H**ost **C**onfiguration **P**rotocol |
| * A client/server **protocol** that automatically **provides** an IP address and other related configuration information [3]. * **Assigned** an IP address, Subnet Mask, DNS and gateway **automatically** to the computer [4]. * No IP's Conflict [4]. |

**•Explain what will happen if you connect your device to a new Wi-Fi** [5].



1-Connect

Device

Wi-Fi

DHCP Server

**DHCP IP Address Pool: ”Lot of IPs”**

**192.168.0.6**

192.168.0.9

192.168.0.13

2-Ask for IP

3-Assign IP address to the client

4- DHCP Lease

5- 192.168.0.6

**SSH:  
•What is SSH?**

|  |  |
| --- | --- |
| **S**  **S**  **H** | stands for **S**ecure **Sh**ell |
| * A network protocol for securing the data that send/receive from the client and the server over an unsecured network [6][7]. |

**•Is it dangerous?**

SSH considered insecure:

1. Use a non-standard port “use a dedicated port to communicate”
2. Use private key pairs

**NAT:  
•What is NAT? Why NAT is important?**

|  |  |
| --- | --- |
| **N**  **A**  **T** | stands for **N**etwork **A**ddress **T**ranslation |
| * A methodology when the router (which assign to it a public IP) share IP addresses for all the devices (Privet IP addresses) which connected to it.[8]  1. PC (Private IP | Sending a request ) -> connect to the Router (Public IP) -> Web server (Public I Receive the request). 2. Web Server (Public IP | Reply)->To the Router (Public IP) -> PC (Private IP | Receiving the reply).[8]  * Solving the limiting of the IP addresses (4 million devices) * The router handle sending/receiving. |

**Web Servers:  
•What is a web server? How does it work? Give two examples of famous web servers.**

|  |  |
| --- | --- |
| **Web**  **Server** | * a **program/computer** that uses HTTP to **serve** the files that form **Web** **pages**(stored) to **user’s** response to their requests [9].   1- User Send a request (Enter URL”DNS”)-> ISP internet server provider (DNS become IP)->Web server-> Web Server webpages.   1. Web Server know the requested webpages ->send web pages(IP back to DNS)->User receive(web page).  * **Examples:**  1. Apache Server. 2. Microsoft IIS. |

**•What is load balancing?**

**Load balancing** is to dealing with the incoming network traffic of servers efficiently.

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[9]"What is Web server? - Definition from WhatIs.com", *WhatIs.com*, 2019. [Online]. Available: https://whatis.techtarget.com/definition/Web-server. [Accessed: 26- Jun- 2019].