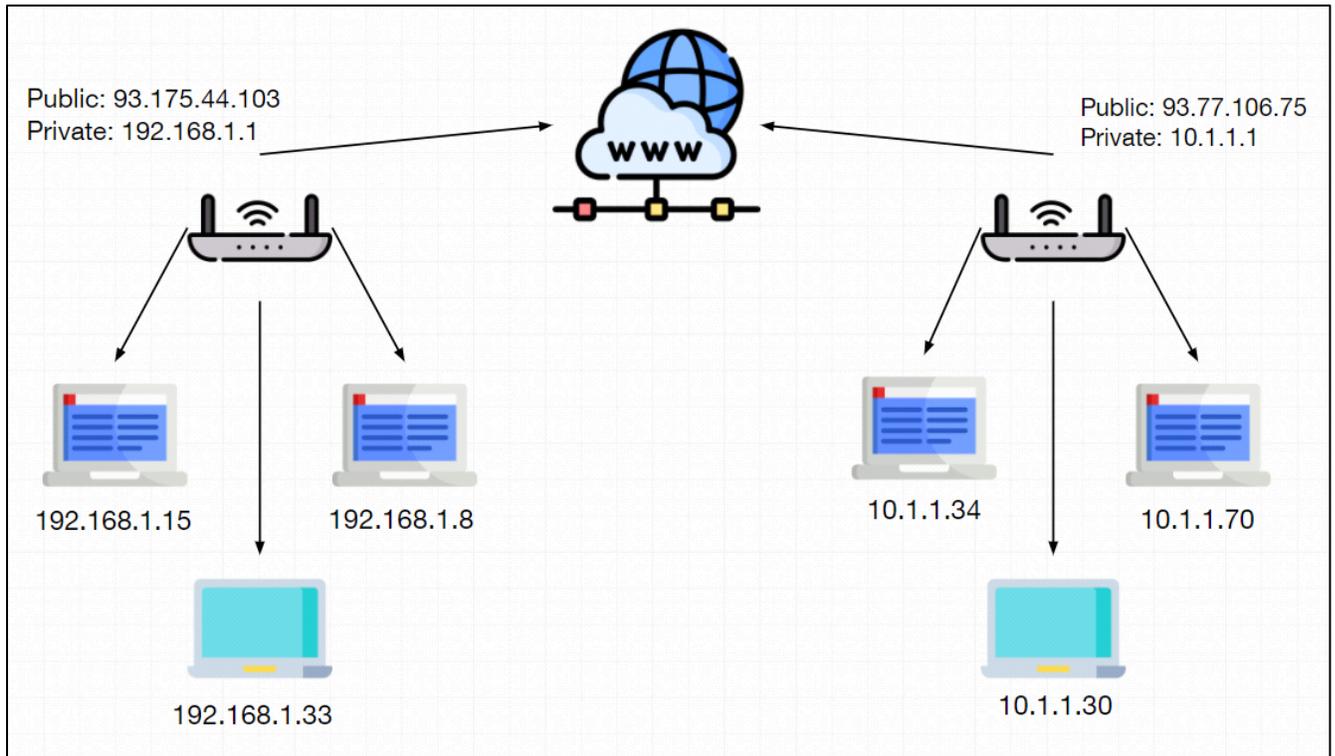


# Complete Ethical Hacking: Zero To Mastery Networking Terms

Here you can find some of the networking terms/basics that we talk about throughout the course!

## ***1) What is the difference between a public and private IP address?***

All IPv4 IP addresses can be divided into two major groups: global, or public, or external - this group can also be called 'WAN addresses' – those that are used in the Internet, and private, or local, or internal addresses – those that are used in the local network (LAN).



## 2) *Public IP-address*

It is public global addresses that are used in the Internet. A public IP address is an IP address that is used to access the Internet. Public (global) IP addresses are routed on the Internet, unlike private addresses.

The presence of a public IP address on your router or computer will allow you to organize your own server (VPN, FTP, WEB, etc.), remote access to your computer, video surveillance cameras, and access them from anywhere in the global network.

With a public IP address, you can set up any home server to publish it on the Internet: Web (HTTP), VPN (PPTP/IPSec/OpenVPN), media (audio/video), FTP, NAS network drive, game server, etc.

### ***3) Private IP-address***

Private internal addresses are not routed on the Internet and no traffic cannot be sent to them from the Internet, they only supposed to work within the local network.

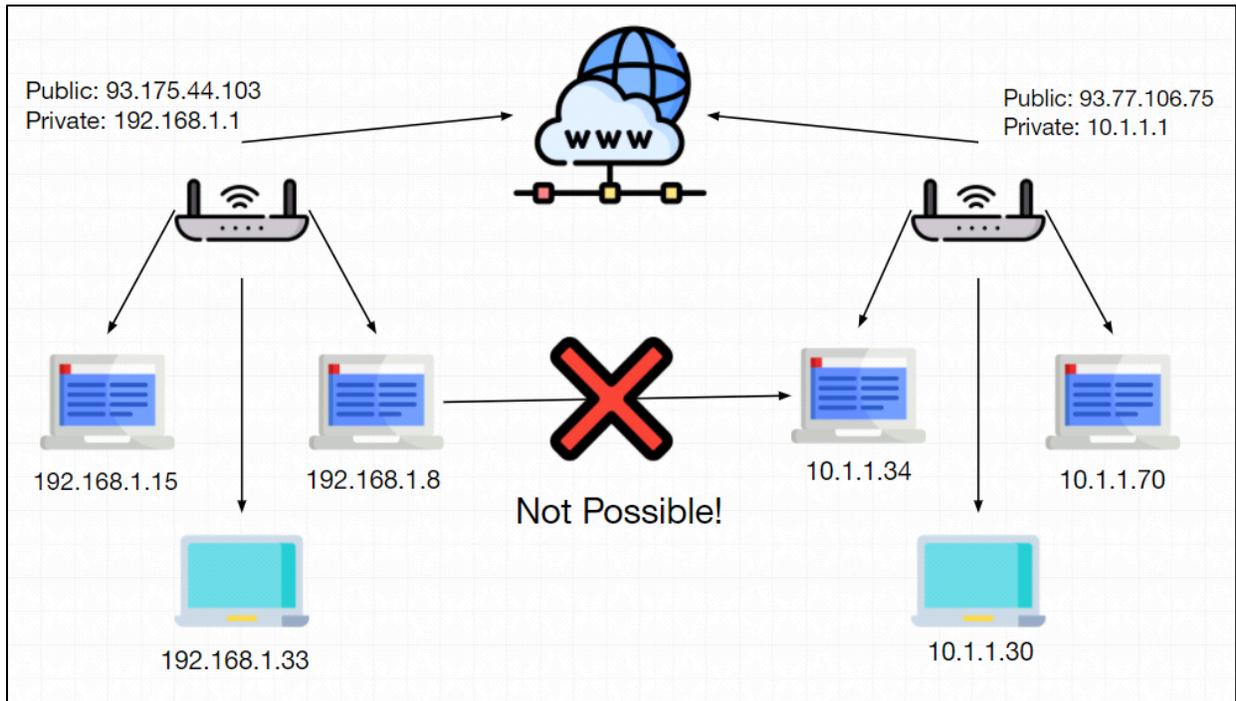
Private addresses include IP addresses from the following subnets:

Range from 10.0.0.0 to 10.255.255.255 – a 10.0.0.0 network with a 255.0.0.0 or an /8 (8-bit) mask

Range from 172.16.0.0 to 172.31.255.255 – a 172.16.0.0 network with a 255.240.0.0 (or a 12-bit) mask

A 192.168.0.0 to 192.168.255.255 range, which is a 192.168.0.0 network masked by 255.255.0.0 or /16

A special range 100.64.0.0 to 100.127.255.255 with a 255.192.0.0 or /10 network mask;



Direct Communication between these 2 is not possible!

#### 4) What is DNS ?

Domain Name Server (DNS) is a standard protocol that helps Internet users discover websites using human readable addresses. Like a phonebook which lets you look up the name of a person and discover their number, DNS lets you type the address of a website and automatically discover the Internet Protocol (IP) address for that website.

Without DNS, the Internet would collapse - it would be impossible for people and machines to access Internet servers via the friendly URLs they have come to know.

### ***5) What is DHCP ?***

Dynamic Host Configuration Protocol (DHCP) is a network management protocol used to automate the process of configuring devices on IP networks, thus allowing them to use network services such as DNS, NTP, and any communication protocol based on UDP or TCP. A DHCP server dynamically assigns an IP address and other network configuration parameters to each device on a network so they can communicate with other IP networks.

### ***6) What is a Router ?***

A router is a device that communicates between the internet and the devices in your home that connect to the internet. As its name implies, it “routes” traffic between the devices and the internet.

A router is a physical or virtual appliance that passes information between two or more packet-switched computer networks. A router inspects a given data packet's destination Internet Protocol address (IP

address), calculates the best way for it to reach its destination and then forwards it accordingly.

A router is a common type of gateway. It is positioned where two or more networks meet at each point of presence on the internet. Hundreds of routers might forward a single packet as it moves from one network to the next on the way to its final destination.

## **7) *Virtual Box Networking***

Okay, had to add this in as it is important in setting up our environment and this is where 99% of issues occur! All of the information about Virtual Box and its Network Settings you can actually find right here:

<https://www.virtualbox.org/manual/ch06.html>

But I am going to write the definition of 2 most important things for this course regarding Virtual Box Networking(these will be important once we actually set up our virtual machine and its network settings and also make sure to read about them on the link above in case you wonder how they work or what are their limitations):

**7.1) NAT - Network Address Translation (NAT)** is the simplest way of accessing an external network from a virtual machine. Usually, it does not require any configuration on the host network and guest system. For

this reason, it is the default networking mode in Oracle VM VirtualBox.

A virtual machine with NAT enabled acts much like a real computer that connects to the Internet through a router. The router, in this case, is the Oracle VM VirtualBox networking engine, which maps traffic from and to the virtual machine transparently. In Oracle VM VirtualBox this router is placed between each virtual machine and the host. This separation maximizes security since by default virtual machines cannot talk to each other.

The disadvantage of NAT mode is that, much like a private network behind a router, the virtual machine is invisible and unreachable from the outside internet.

**7.2) *With bridged networking***, Oracle VM VirtualBox uses a device driver on your host system that filters data from your physical network adapter. This driver is therefore called a net filter driver. This enables Oracle VM VirtualBox to intercept data from the physical network and inject data into it, effectively creating a new network interface in software. When a guest is using such a new software interface, it looks to the host system as though the guest were physically connected to the interface using a network cable. The host can send data to the guest through that interface and receive data

from it. This means that you can set up routing or bridging between the guest and the rest of your network.

### **8) *What are TCP & UDP?***

Actually this website explains it really well (we also do cover this inside of the course so you can wait for those lectures as well or you can learn it right now here!):

<https://www.privateinternetaccess.com/blog/tcp-vs-udp-understanding-the-difference/>

### **9) *What is ARP?***

**This is actually also something we cover in the course but perhaps you just like to know about it before we get to it:**

In order to be able to send data packets in TCP/IP networks, a transmitter requires three bits of address information to be sent via the host: the subnet mask, the IP address and the MAC address (also the hardware address or physical address). Your netmask and IP address receive network devices automatically and flexibly when they connect to a network. For this purpose, the connecting communication devices, such as routers or hubs, revert to the DHCP protocol. In local networks, the two entries can also be entered manually. The hardware address is, however, assigned by the manufacturer of the

respective device and is linked to a specific IP address by means of the so-called Address Resolution Protocol (ARP).

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If you want to know even more about networking and all the different protocols that we use or not use inside of the course, take a look at this simple networking guide!

<https://www.geeksforgeeks.org/introduction-of-internetworking/?ref=lbp>