Experiment no : 1B

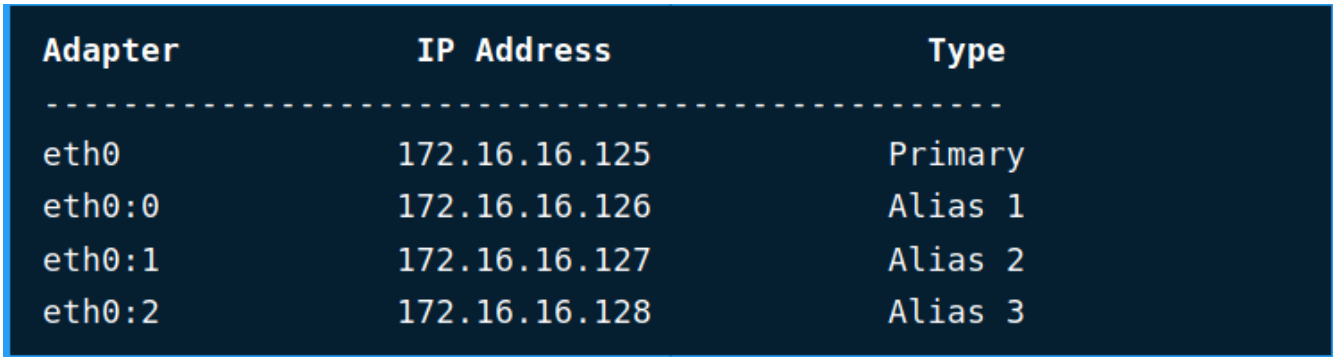
Aim : Set up multiple IP addresses on a single LAN using command prompt.

Theory :
The concept of creating or configuring multiple IP addresses on a single network interface is called IP aliasing. IP aliasing is very useful for setting up multiple virtual sites on Apache using one single network interface with different IP addresses on a single subnet network.
The main advantage of using this IP aliasing is, you don't need to have a physical adapter attached to each IP, but instead you can create multiple or many virtual interfaces (aliases) to a single physical card.
The instructions given here are applies to all major Linux distributions like Red Hat, Fedora, and CentOS. Creating multiple interfaces and assign IP address to it manually is a daunting task. Here we'll see how we can assign IP address to it defining a set of IP range. Also understand how we are going to create a virtual interface and assign different range of IP Address to an interface in one go. In this article we used LAN IP's, so replace those with ones you will be using.
Creating Virtual Interface and Assign Multiple IP Addresses

Here I have an interface called "ifcfg-eth0", the default interface for the Ethernet device. If you've attached second Ethernet device, then there would be an "ifcfg-eth1" device and so on for each device you've attached. These device network files are located in "/etc/sysconfig/network-scripts/" directory. Navigate to the directory and do "ls -l" to list all devices.

```
# cd /etc/sysconfig/network-scripts/
# ls -l
```

Let's assume that we want to create three additional virtual interfaces to bind three IP addresses (172.16.16.126, 172.16.16.127, and 172.16.16.128) to the NIC. So, we need to create three additional alias files, while "ifcfg-eth0" keeps the same primary IP address. This is how we moving forward to setup three aliases to bind the following IP addresses.



Adapter	IP Address	Type
eth0	172.16.16.125	Primary
eth0:0	172.16.16.126	Alias 1
eth0:1	172.16.16.127	Alias 2
eth0:2	172.16.16.128	Alias 3

You can see the available network interfaces on your machine by using the simple command ifconfig
Shell
i#fconfig
You can find the interfaces and their names and you can identify the name which is preceded by colon(:) in the left side. Something like eth0, lo and wlan0 etc. The network interface lo interface is the special interface where we called it as localhost and special IP assigned to it 127.0.0.1 also called loopback IP.

Do you know? you can assign multiple IPs to single network interface. This is pretty useful when you need multiple IP addresses but you have only one network card.
Shell
ifconfig eht0:1 192.168.2.9 up

#ifconfig eht0:1 192.168.2.9 up

We created new interface alias with IP assigned. We can do it simply by giving colon(:) and alias number.
Assign IP using ifconfig

Shell
ifconfig eth0 down
#ifconfig eth0 192.168.2.3 up

#ifconfig eth0 down
#ifconfig eth0 192.168.2.3 up

This command will assign the specified IP to the give network interface. It is not a persistent change. The would change after reboot.
ifconfig eth0 192.168.2.14 netmask 255.255.255.0 up
ifconfig eth0 192.168.2.14 netmask 255.255.255.0 up

Get IP using dhclient

The program dhclient will get you the IP to the given interface using the Dynamic Host Configuration Protocol (DHCP). The IP which will be assigned to the given network interface which will be provided by gateway or router. If you won’t have any preference of having specific IP assigned to the network card, this can be used
Shell
dhclient eth0
Assign static IP

The IP we assigned above is not a persistent or static IP. Means you will lose that IP and will get an other different IP assigned after reboot. To make this IP permanent we have to edit the configuration files.
Ubuntu /etc/network/interfaces

Shell

```
# Your primary public IP address.
iface eth0 inet static
    address 198.51.100.5/24
    gateway 198.51.100.1

# To add a second public IP address:
iface eth0 inet static
    address 198.51.100.10/24

# To add a private IP address:
iface eth0 inet static
    address 192.0.2.6/17
```


```
# Your primary public IP address.
iface eth0 inet static
    address 198.51.100.5/24
    gateway 198.51.100.1

# To add a second public IP address:
iface eth0 inet static
    address 198.51.100.10/24

# To add a private IP address:
iface eth0 inet static
```

address 192.0.2.6/17

CentOS /etc/sysconfig/network-scripts/ifcfg-eth0

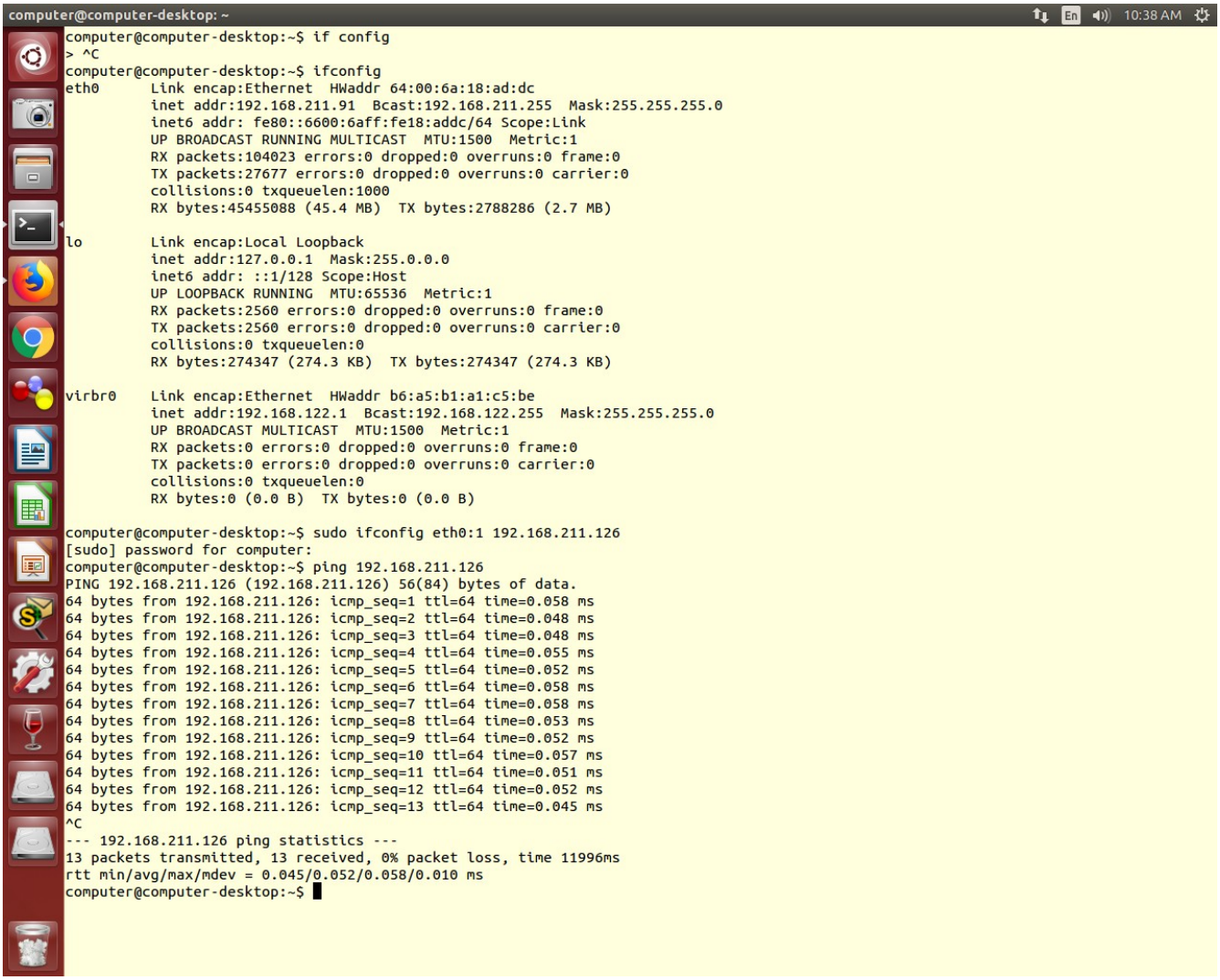
Unlike the distribution Debian, CentOS maintains the configuration in a separate file for each interface. The file path would be something like /etc/sysconfig/network-scripts/ifcfg-<interface_name>.
Shell
# eth0
DEVICE=eth0
BOOTPROTO=none
ONBOOT=yes

# Your primary public IP address.
IPADDR=198.51.2.5
NETMASK=255.255.255.0
GATEWAY=198.51.2.1

# eth0
DEVICE=eth0
BOOTPROTO=none
ONBOOT=yes

# Your primary public IP address.
IPADDR=198.51.2.5
NETMASK=255.255.255.0
GATEWAY=198.51.2.1

OUTPUT :



Conclusion :

Thus multiple IP addresses on a single LAN using command prompt has been set up.