Late Labs - marvleon

Lab 1.2 ARP Wireshark Netsim

1.2.1 ARP (linux.cs.pdx.edu)

IPv4 address (ens): 131.252.208.103
Hardware address: 52:54:00:13:a0:c6
Default router's IP address: 131.252.208.1
Default router name: router.seas.pdx.edu
Default router hardware address: 00:00:5e:00:01:01
50 entries in the ARP table

1.2.2 -

List any IP addresses share the same hardware address

(30:e4:db:f9:26:37)131.252.208.212, 169.254.169.254
(52:54:00:5f:45:5f) 131.252.208.121, 131.252.208.20

How many less hardware addresses are there than IP addresses in the ARP table?

```
arp -a | sort -k 4 | awk '{print $4}' | uniq | wc -l
```

(2)

Use a single command-line to create a file that contains each IP address that appears in the machine's arp table and places the results in a file called arp_entries.

arp -an | awk -F '[()]' '{print $2}' > arp_entries

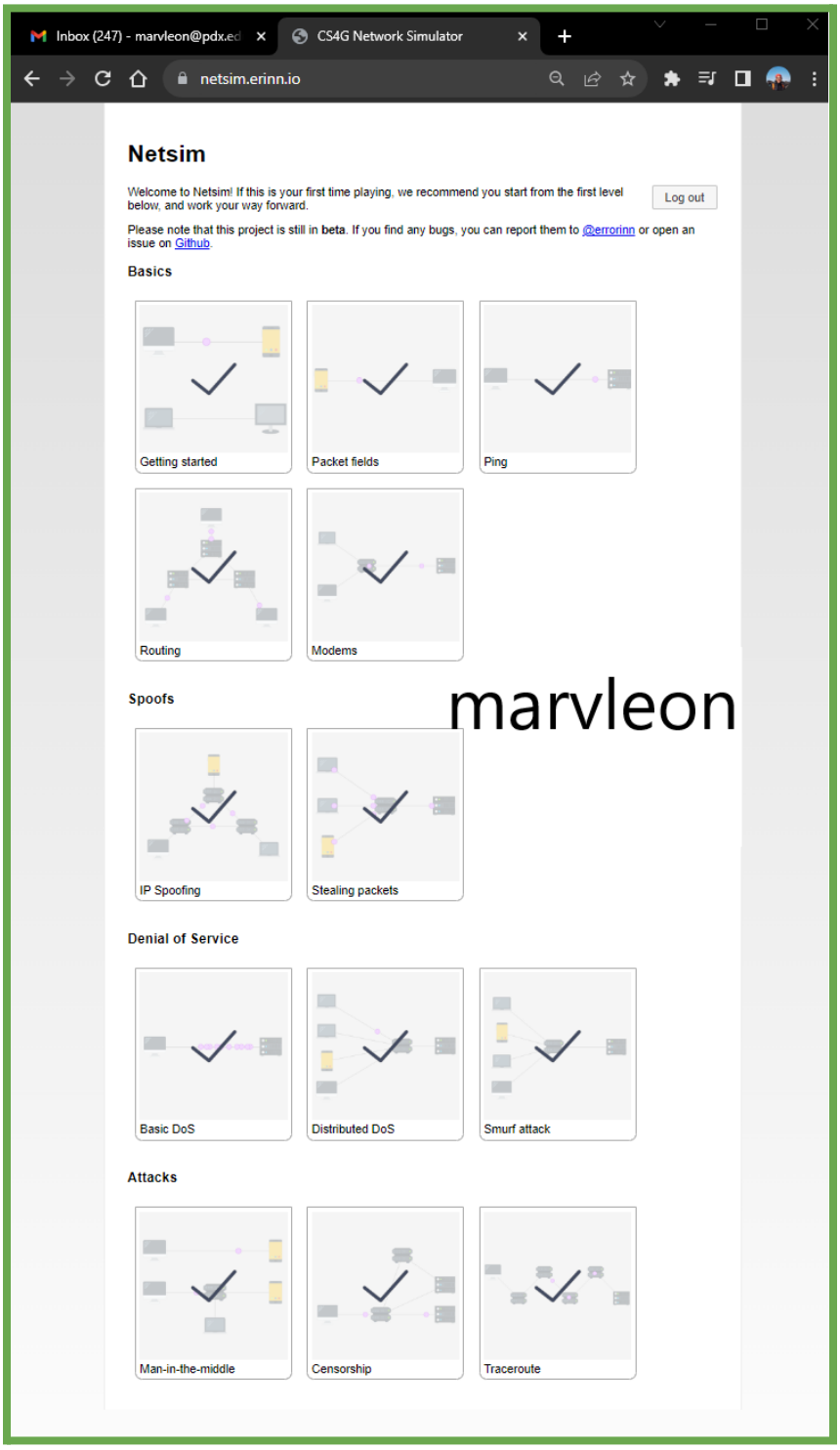
What network prefix do most of the IP addresses in the ARP table share?

131.252.208

1.2.3 ARP (Cloud)

IPv4 address of ens4: 10.138.0.2
Hardware address: 42:01:0a:8a:00:02
Default Router IP address: 10.138.0.1
Default Router Hardware address: 42:01:0a:8a:00:01

1.2.4 NetSim Cloud



Lab 1.3 Cloud Networking

1.3.3 Scan targets for services

```
marvleon@course-vm:~$ nmap 10.138.0.29
Starting Nmap 7.80 ( https://nmap.org ) at 2023-12-09 09:19 UTC
Nmap scan report for multi-tier-wordpress-1-node-0.c.cloud-leon-marvleon.internal (10.138.0.29)
Host is up (0.00022s latency).
Not shown: 997 closed ports
PORT    STATE SERVICE
22/tcp  open  ssh
80/tcp  open  http
443/tcp open  https

Nmap done: 1 IP address (1 host up) scanned in 0.18 seconds
marvleon@course-vm:~$ nmap 10.138.0.31
Starting Nmap 7.80 ( https://nmap.org ) at 2023-12-09 09:19 UTC
Nmap scan report for tomcat-1-vm.c.cloud-leon-marvleon.internal (10.138.0.31)
Host is up (0.00021s latency).
Not shown: 996 closed ports
PORT     STATE SERVICE
22/tcp   open  ssh
80/tcp   open  http
443/tcp  open  https
8080/tcp open  http-proxy

Nmap done: 1 IP address (1 host up) scanned in 0.07 seconds
marvleon@course-vm:~$ nmap 10.138.0.30
Starting Nmap 7.80 ( https://nmap.org ) at 2023-12-09 09:19 UTC
Nmap scan report for wordpress-1-vm.c.cloud-leon-marvleon.internal (10.138.0.30)
Host is up (0.00027s latency).
Not shown: 997 closed ports
PORT    STATE SERVICE
22/tcp  open  ssh
80/tcp  open  http
443/tcp open  https

Nmap done: 1 IP address (1 host up) scanned in 0.07 seconds
marvleon@course-vm:~$
```

1.3.5 Navigating Default Networks

```
marvleon@cloudshell:~ (cloud-leon-marvleon)$ gcloud compute networks subnets list | grep default | wc -l
84
marvleon@cloudshell:~ (cloud-leon-marvleon)$ gcloud compute networks subnets list | grep REGION | awk '{print $2}' | sort | uniq | wc -l
42
marvleon@cloudshell:~ (cloud-leon-marvleon)$
```

- **Given the CIDR prefix associated with each subnetwork, how many hosts does each subnetwork support?**
    - 4094
- **Which CIDR subnetworks are these instances brought up in? Do they correspond to the appropriate region based on the prior commands?**
    - US-WEST-1-b is brought up in 10.138.0.0/20
    - US-EAST-1-b is brought up in 10.142.0.0/20
    - Yes they correspond to the appropriate region
- **What facilitates this connectivity: the virtual switch or the VPN Gateway?**
    - Virtual Switch

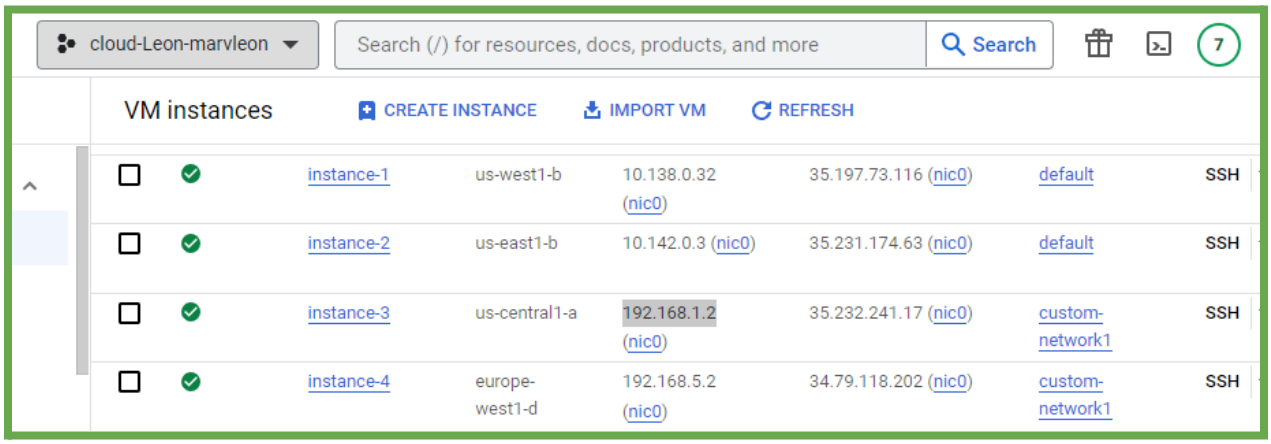
1.3.6 Creating custom networks

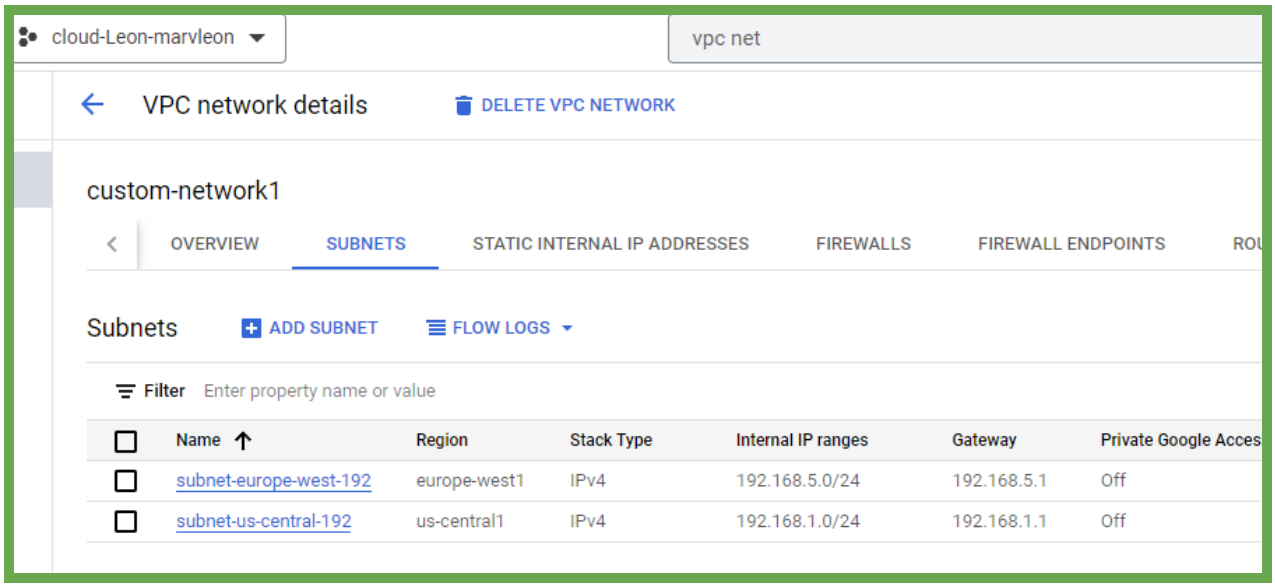
```
marvleon@cloudshell:~ (cloud-leon-marvleon)$ gcloud compute networks subnets list --network custom-network1
NAME: subnet-us-central-192
REGION: us-central1
NETWORK: custom-network1
RANGE: 192.168.1.0/24
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: subnet-europe-west-192
REGION: europe-west1
NETWORK: custom-network1
RANGE: 192.168.5.0/24
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:
marvleon@cloudshell:~ (cloud-leon-marvleon)$ gcloud compute networks subnets list --regions=europe-west1
NAME: default
REGION: europe-west1
NETWORK: default
RANGE: 10.132.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: subnet-europe-west-192
REGION: europe-west1
NETWORK: custom-network1
RANGE: 192.168.5.0/24
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:
```

- **Explain why the result of this ping is different from when you performed the ping to instance-2**
    - It's different because its on a different subnet!




cloud-Leon-marvleon
vpc net
VPC network details
DELETE VPC NETWORK
custom-network1
OVERVIEW
SUBNETS
STATIC INTERNAL IP ADDRESSES
FIREWALLS
FIREWALL ENDPOINTS
Subnets
ADD SUBNET
FLOW LOGS
Filter
Enter property name or value
Name
Region
Stack Type
Internal IP ranges
Gateway
Private Google Acces
subnet-europe-west-192
europe-west1
IPv4
192.168.5.0/24
192.168.5.1
Off
subnet-us-central-192
us-central1
IPv4
192.168.1.0/24
192.168.1.1
Off