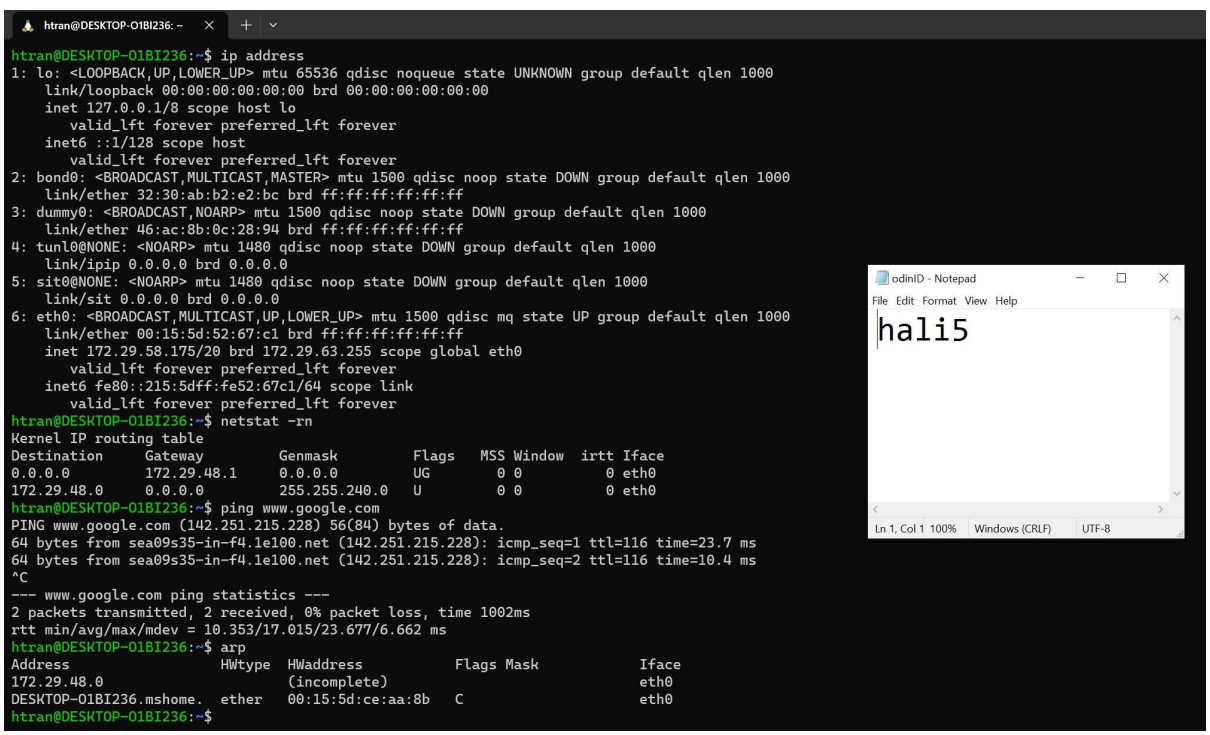
01.2 ARP, Wireshark, Netsim

ARP #1

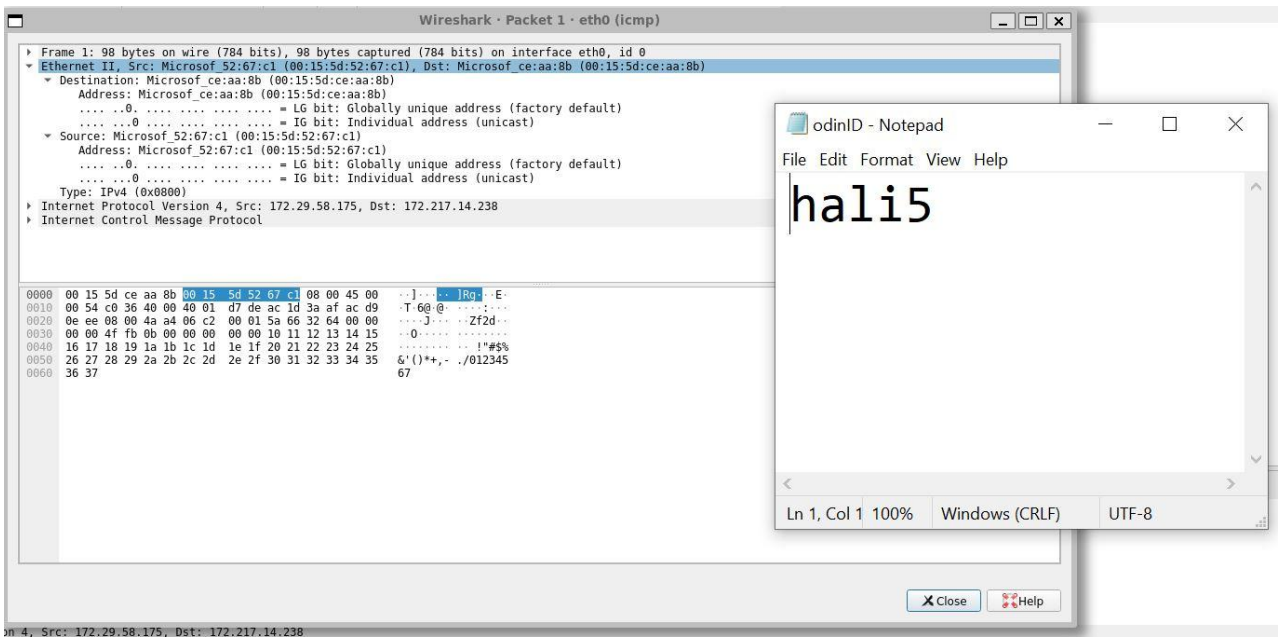


Note: Professor Wu-chang feng allowed me to ping www.google.com instead of my default router's IP address due to unresolved issues regarding netstat -rn and Ubuntu WSL

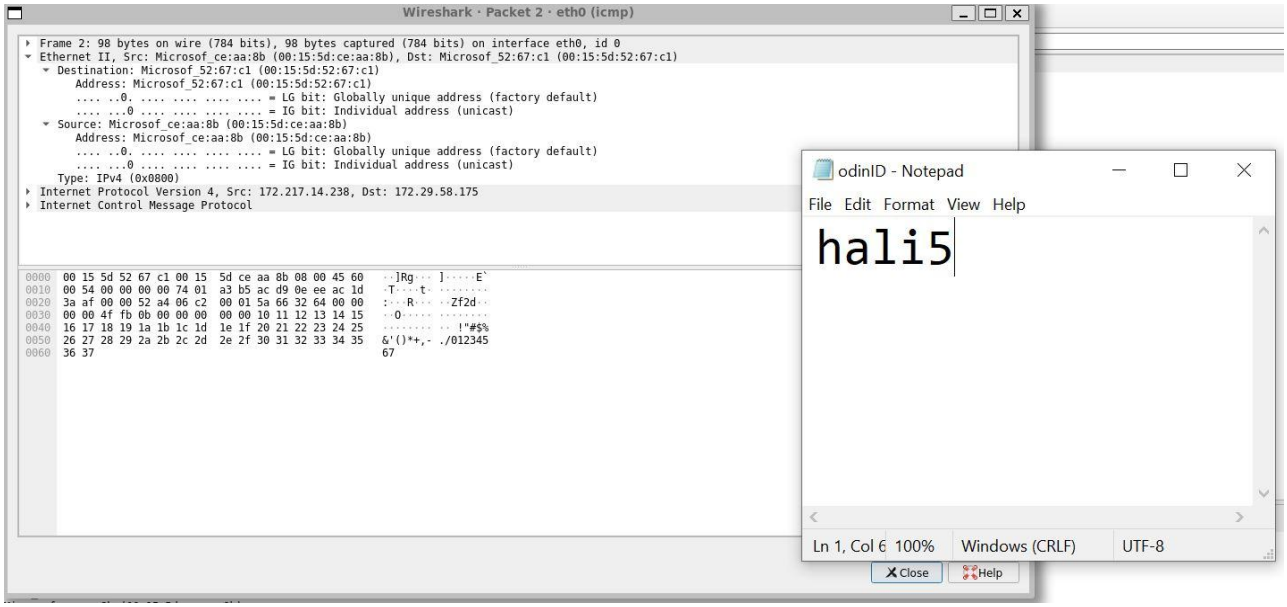
Which hardware manufacturer does the destination hardware address of the packet indicate?

The destination hardware address packet indicates that the hardware manufacturer is Microsoft. This is shown in the screenshots below under Destination → Address

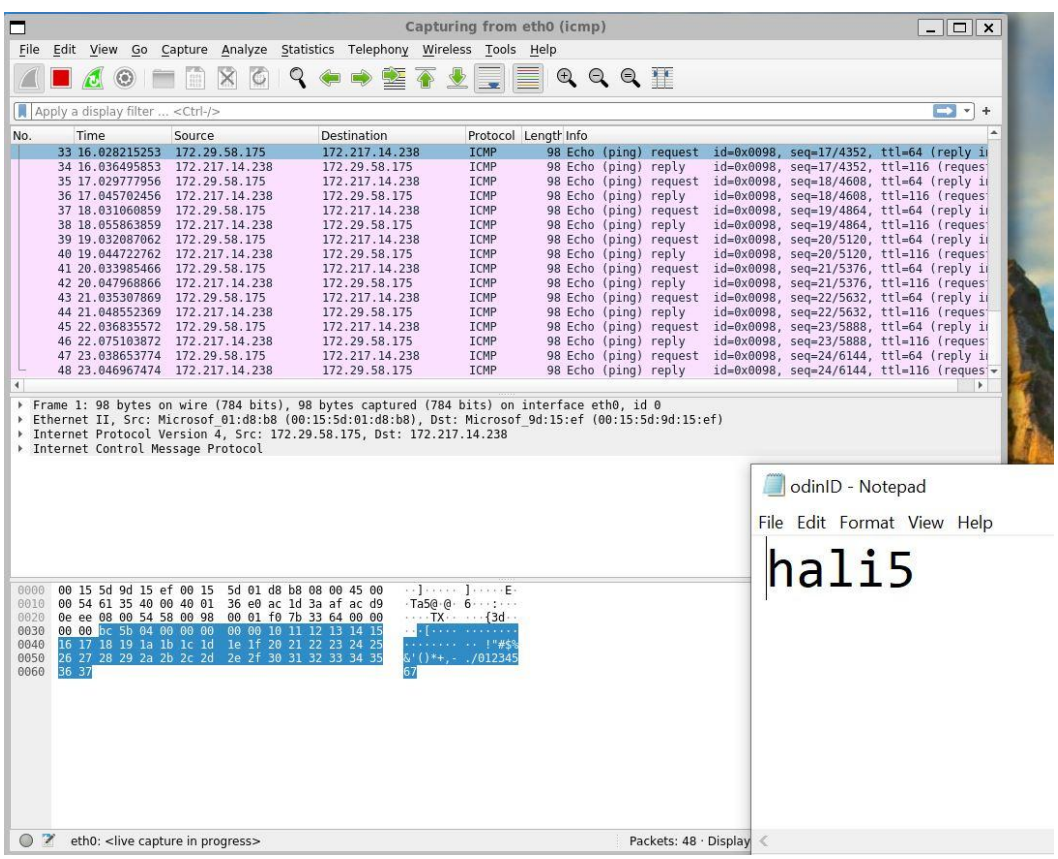
Request packet window



Response packet window

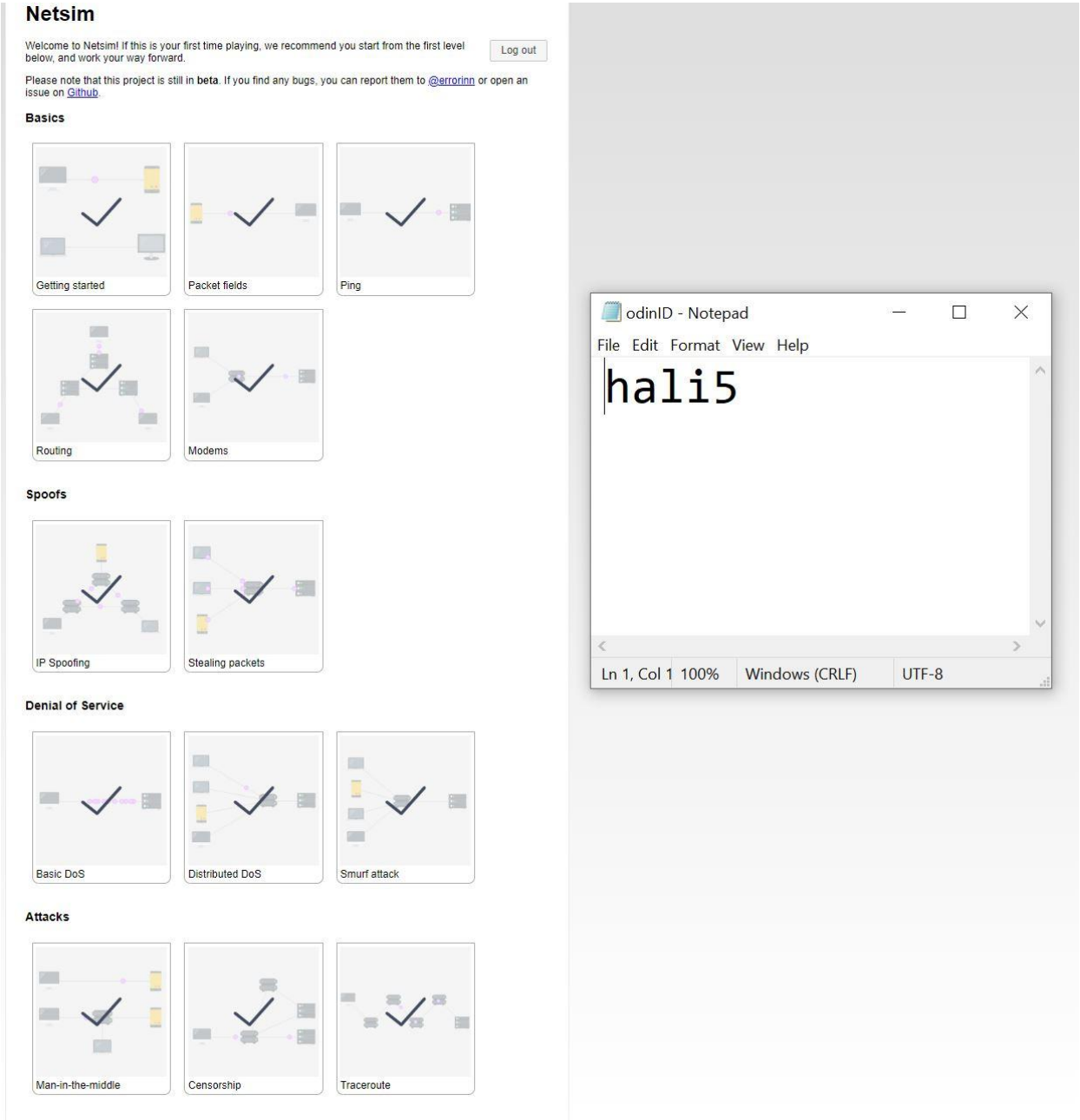


Screenshot of the bytes in the packet dump window



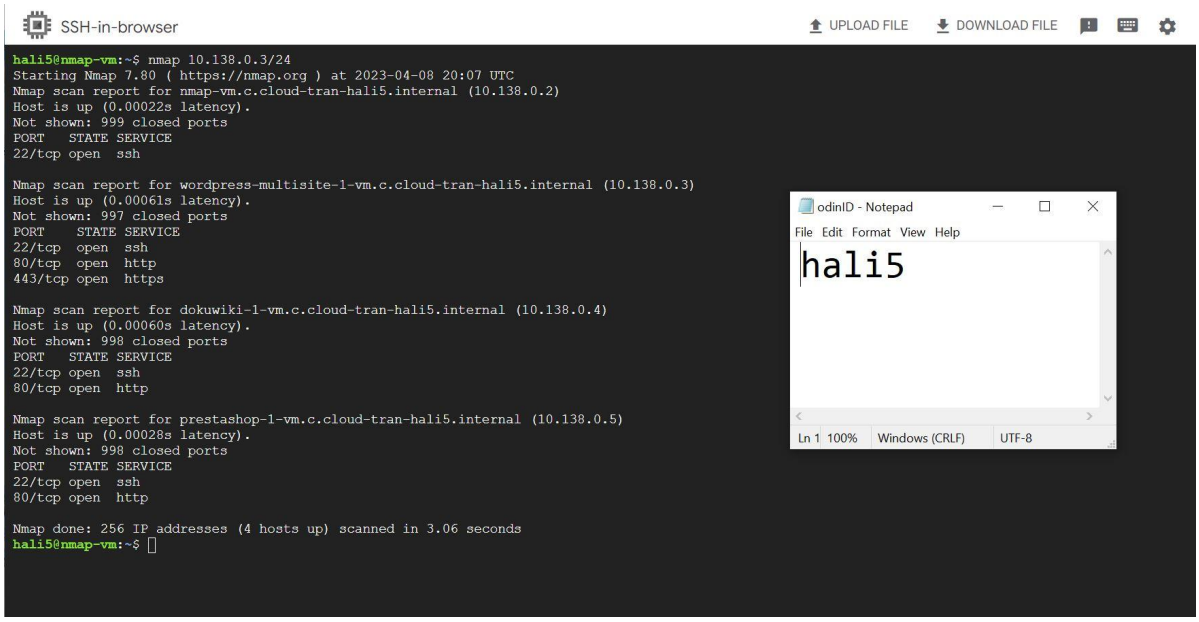
Netsim #2

Screenshot of the completed list of levels in Netsim.



01.3: Cloud Networking

Scan targets for services



Navigating default networks

How many subnetworks are created initially on the default network? How many regions does this correspond to?

There are 38 subnetworks that are initially created on the default network, with 38 corresponding regions.

Given the CIDR prefix associated with each subnetwork, how many hosts does each subnetwork support?

Each subnetwork supports 4096 hosts.

Which CIDR subnetworks are these instances brought up in? Do they correspond to the appropriate region based on the prior commands?

The CIDR subnetwork that these instances are brought up in are 10.150.0.2 for us-east4b and 10.182.0.2 for us-west-4b. Yes, they both correspond to the appropriate region based on the prior command.

```
hali5@cloudshell:~ (cloud-tran-hali5)$ gcloud compute instances list
NAME: instance-1
ZONE: us-east4-b
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.150.0.2
EXTERNAL_IP: 34.86.247.112
STATUS: RUNNING

NAME: instance-2
ZONE: us-west4-b
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.182.0.2
EXTERNAL_IP: 34.125.50.29
STATUS: RUNNING
hali5@cloudshell:~ (cloud-tran-hali5)$
```

From the figure in the previous step. What facilitates this connectivity: the virtual switch or the VPN Gateway?

The Virtual Switch

Creating Custom Networks

Take a screenshot of the new subnets created in custom-network1 alongside the default subnetworks in those regions assigned to the default network

```
hali5@cloudshell:~ (cloud-tran-hali5)$ gcloud compute networks subnets list --regions=us-central1
NAME: default
REGION: us-central1
NETWORK: default
RANGE: 10.128.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

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:
```

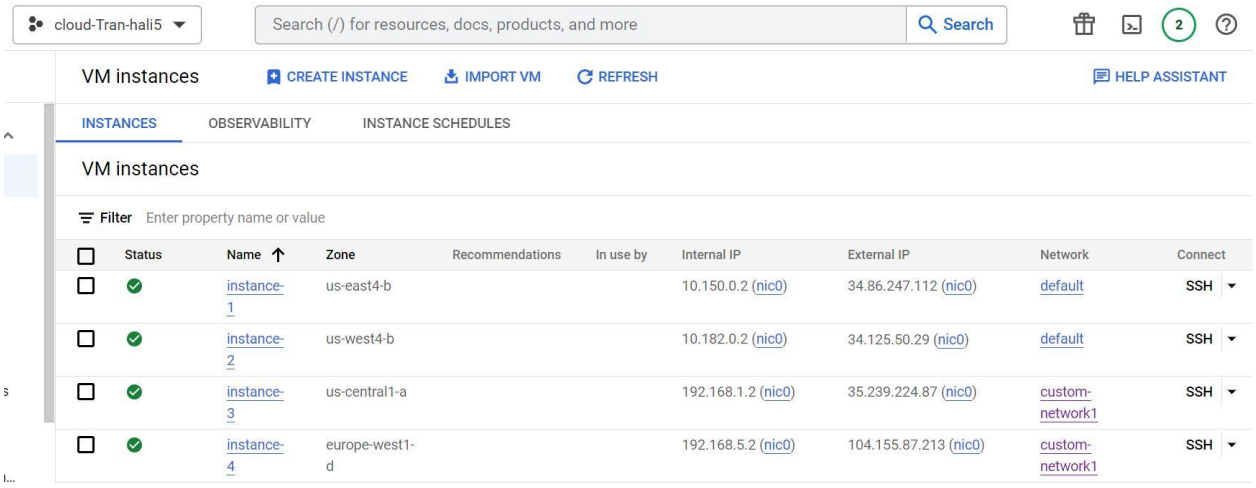
```
hali5@cloudshell:~ (cloud-tran-hali5)$ gcloud compute networks subnets list --regions=europe-west1
NAME: default
REGION: europe-west1
NETWORK: default
RANGE: 10.132.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

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 is different from instance-2

Since instance-1 is within the same network as instance-2, it is able to perform the ping command and get a response back. However, instance-1 is not within the same network as instance-3 and instance-4 which is why an attempt to ping those VM's results in no response.

Take screenshots of all 4 instances in the UI including the network they belong to.



Then visit "VPC Network" and take a screenshot of the subnetworks created.