

CS 530 INTERNET WEB AND CLOUD SYSTEMS

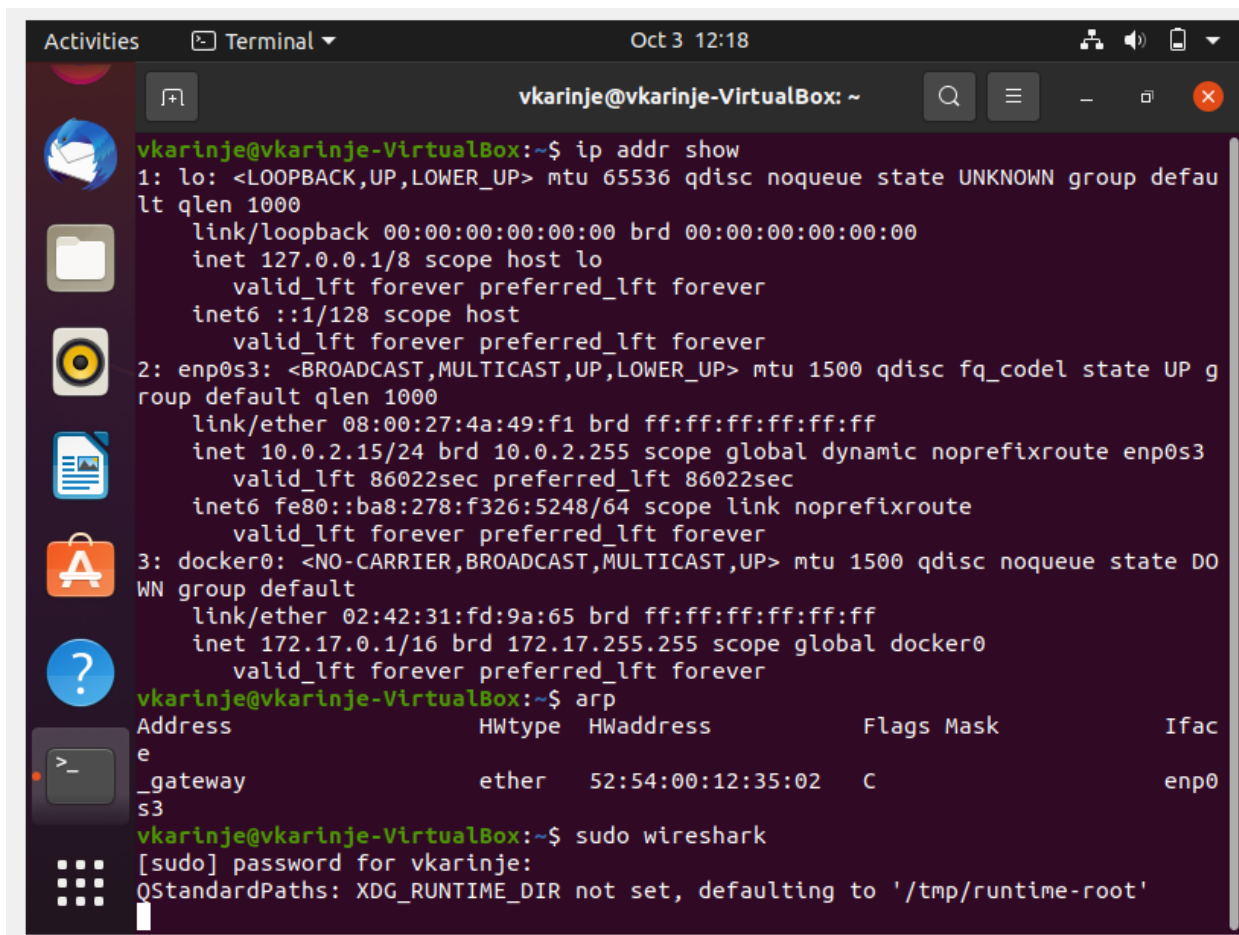
Name: Varsha Karinje

PSU ID:925923534

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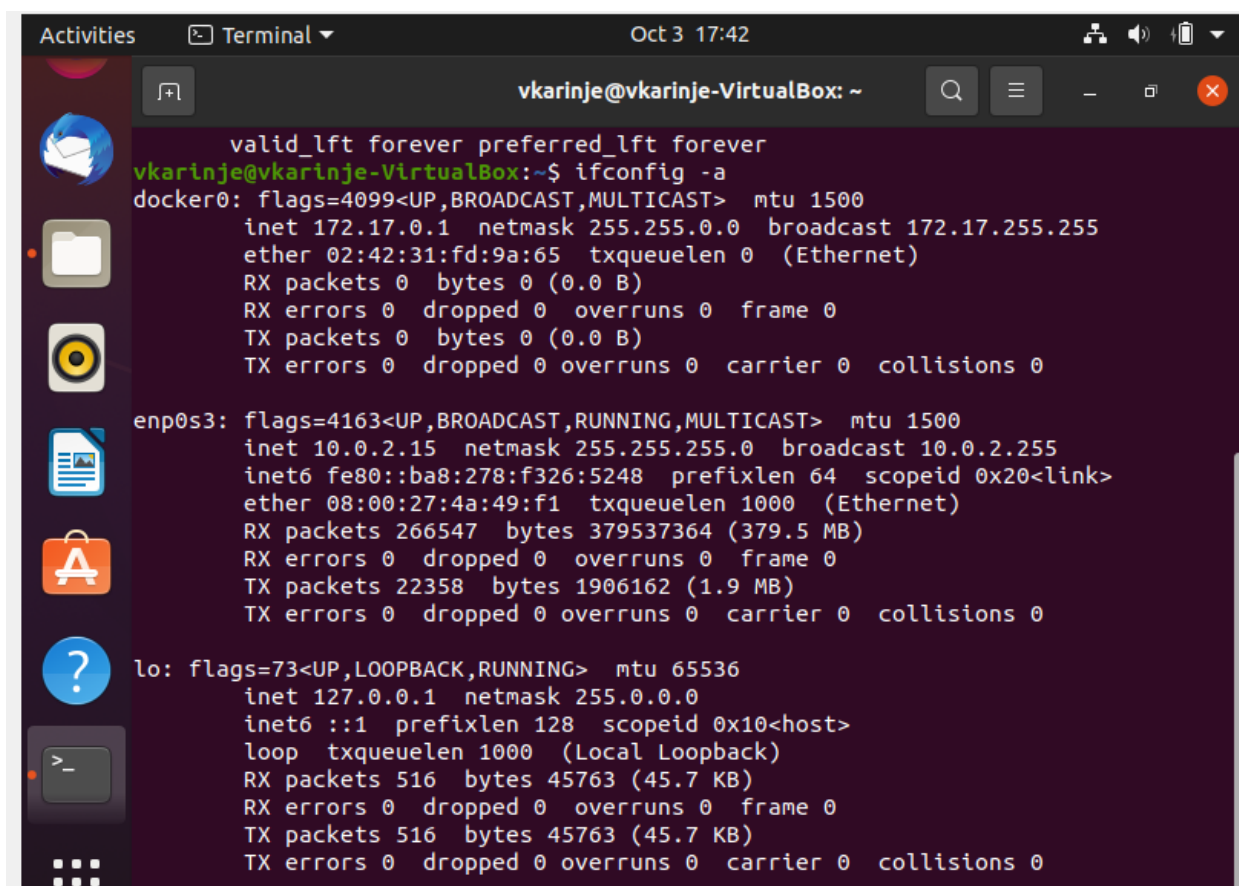
ARP#1

Perform the following tasks and take screenshots that include your OdinID to indicate what you have found



The screenshot shows a terminal window titled "vkarinje@vkarinje-VirtualBox: ~" with a search bar and window controls. The terminal output is as follows:

```
vkarinje@vkarinje-VirtualBox:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defau
lt qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP g
roup default qlen 1000
    link/ether 08:00:27:4a:49:f1 brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute enp0s3
        valid_lft 86022sec preferred_lft 86022sec
    inet6 fe80::ba8:278:f326:5248/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DO
WN group default
    link/ether 02:42:31:fd:9a:65 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
vkarinje@vkarinje-VirtualBox:~$ arp
Address                  HWtype  HWaddress           Flags Mask            Ifac
e
_gateway                ether    52:54:00:12:35:02    C                    enp0
s3
vkarinje@vkarinje-VirtualBox:~$ sudo wireshark
[sudo] password for vkarinje:
QStandardPaths: XDG_RUNTIME_DIR not set, defaulting to '/tmp/runtime-root'
```



```

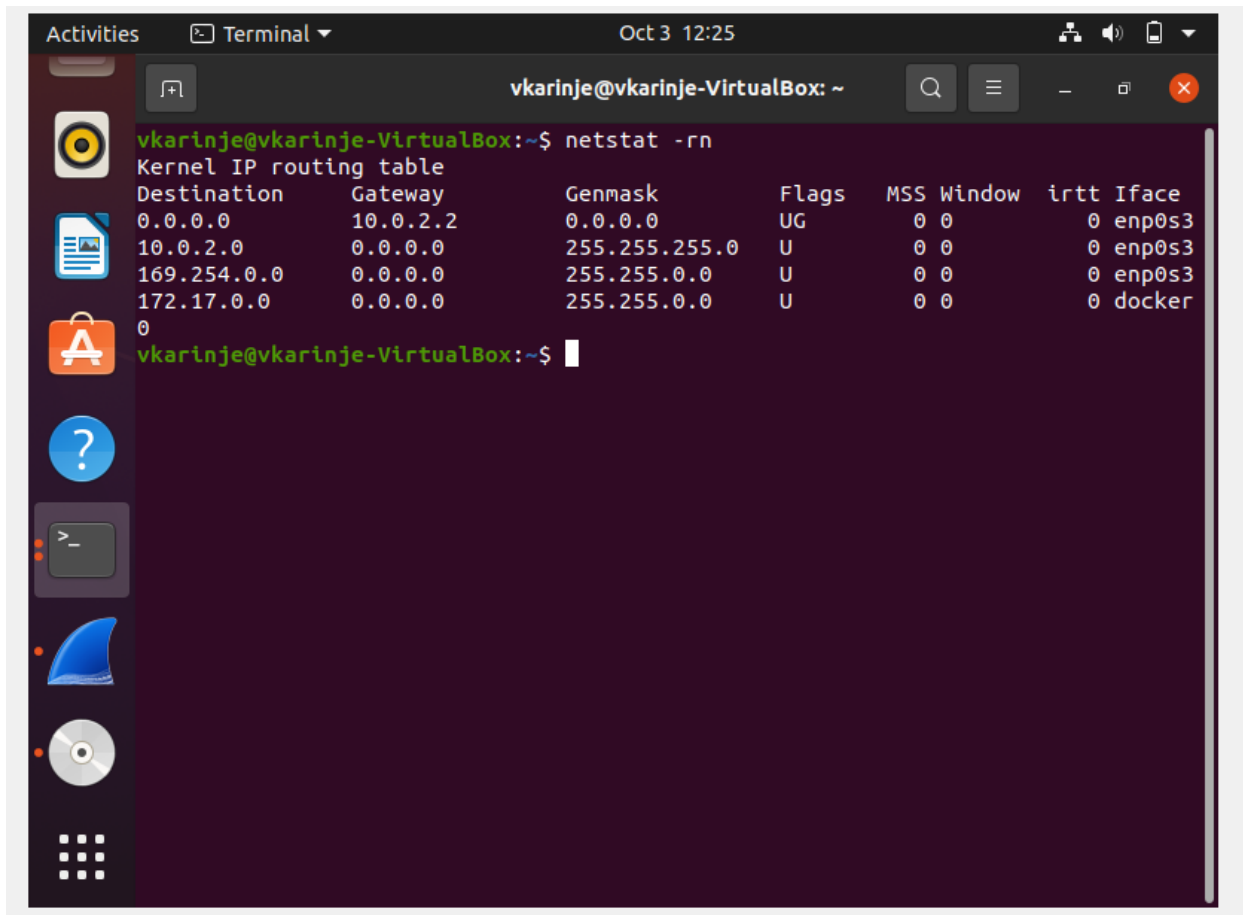
valid_lft forever preferred_lft forever
vkarinje@vkarinje-VirtualBox:~$ ifconfig -a
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    ether 02:42:31:fd:9a:65 txqueuelen 0 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::ba8:278:f326:5248 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:4a:49:f1 txqueuelen 1000 (Ethernet)
    RX packets 266547 bytes 379537364 (379.5 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 22358 bytes 1906162 (1.9 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 516 bytes 45763 (45.7 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 516 bytes 45763 (45.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

netstat -rn

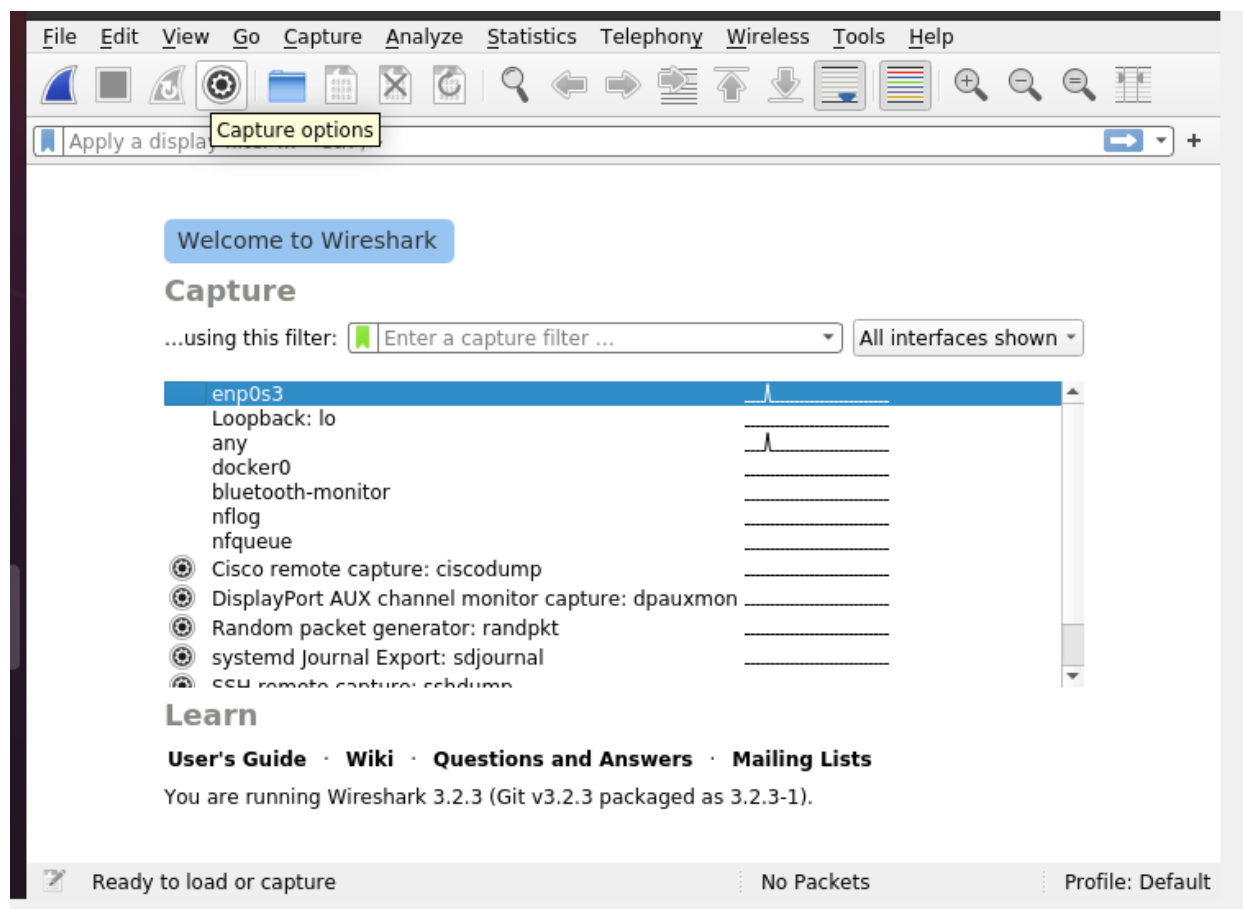


The screenshot shows a terminal window titled "vkarinje@vkarinje-VirtualBox: ~" with a search icon, a menu icon, and window control buttons. The terminal output displays the kernel IP routing table for the user 'vkarinje'.

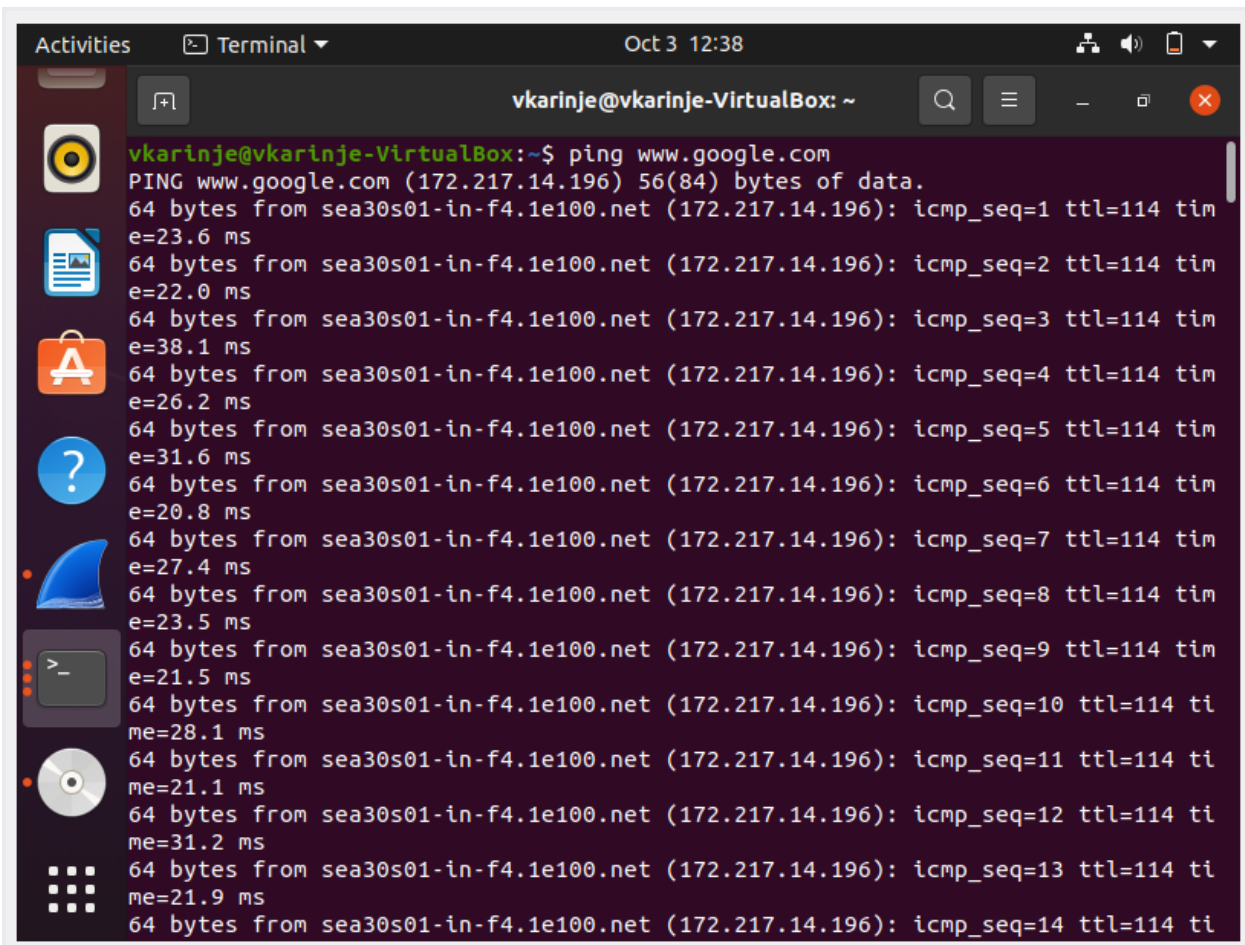
```
vkarinje@vkarinje-VirtualBox:~$ netstat -rn
Kernel IP routing table
Destination      Gateway         Genmask         Flags        MSS  Window  irtt  Iface
0.0.0.0          10.0.2.2        0.0.0.0         UG            0    0        0     enp0s3
10.0.2.0         0.0.0.0         255.255.255.0   U             0    0        0     enp0s3
169.254.0.0      0.0.0.0         255.255.0.0     U             0    0        0     enp0s3
172.17.0.0       0.0.0.0         255.255.0.0     U             0    0        0     docker
0
```

The terminal window also features a sidebar on the left with icons for various applications: a terminal, a file manager, a web browser, a help icon, a terminal icon, a network icon, a CD icon, and a grid icon.

Select your VMs virtual ethernet interface (e.g. `enp0s3`), then begin a capture



In a separate terminal, ping www.google.com



```
vkarinje@vkarinje-VirtualBox: ~  
vkarinje@vkarinje-VirtualBox:~$ ping www.google.com  
PING www.google.com (172.217.14.196) 56(84) bytes of data.  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=1 ttl=114 time=23.6 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=2 ttl=114 time=22.0 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=3 ttl=114 time=38.1 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=4 ttl=114 time=26.2 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=5 ttl=114 time=31.6 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=6 ttl=114 time=20.8 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=7 ttl=114 time=27.4 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=8 ttl=114 time=23.5 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=9 ttl=114 time=21.5 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=10 ttl=114 time=28.1 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=11 ttl=114 time=21.1 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=12 ttl=114 time=31.2 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=13 ttl=114 time=21.9 ms  
64 bytes from sea30s01-in-f4.1e100.net (172.217.14.196): icmp_seq=14 ttl=114 time=21.9 ms
```

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

ANS: RealtekU_12:35:02 (52:54:00:12:35:02)

Take a screenshot of the bytes in the packet dump window as shown below

Activities Wireshark Oct 3 12:47

*enp0s3

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000000	10.0.2.15	75.75.75.75	DNS	85	Standard query
2	0.000497375	10.0.2.15	75.75.75.75	DNS	85	Standard query
3	0.025555782	75.75.75.75	10.0.2.15	DNS	113	Standard query
4	0.025556169	75.75.75.75	10.0.2.15	DNS	101	Standard query
5	0.029625028	10.0.2.15	172.217.14.196	ICMP	98	Echo (ping) req
6	0.053231158	172.217.14.196	10.0.2.15	ICMP	98	Echo (ping) rep
7	0.054349801	10.0.2.15	75.75.75.75	DNS	98	Standard query
8	0.072452522	75.75.75.75	10.0.2.15	DNS	126	Standard query

Frame 5: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface enp0s3, id 0

Ethernet II, Src: PcsCompu_4a:49:f1 (08:00:27:4a:49:f1), Dst: RealtekU_12:35:02 (52:54:00:12:35:02)

Destination: RealtekU_12:35:02 (52:54:00:12:35:02)

Source: PcsCompu_4a:49:f1 (08:00:27:4a:49:f1)

Type: IPv4 (0x0800)

Internet Protocol Version 4, Src: 10.0.2.15, Dst: 172.217.14.196

Internet Control Message Protocol

0000 52 54 00 12 35 02 08 00 27 4a 49 f1 08 00 45 00 RT...5... 'JI...E

0010 00 54 f2 7b 40 00 40 01 80 81 0a 00 02 0f ac d9 .T...{...@...

0020 0e c4 08 00 d9 34 00 01 00 01 8c 39 3b 63 00 004... ..9;c...

0030 00 00 94 59 04 00 00 00 00 00 10 11 12 13 14 15 ..Y.....

0040 16 17 18 19 1a 1b 1c 1d 1e 1f 20 21 22 23 24 25 !"#%\$

0050 26 27 28 29 2a 2b 2c 2d 2e 2f 30 31 32 33 34 35 &'()*+,-./012345

0060 36 37 67

Destination H...dst), 6 byte Packets: 1304 · Displayed: 1304 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Wireshark request

Activities Wireshark Oct 3 13:10

*enp0s3

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
13	3.034201711	10.0.2.15	172.217.14.196	ICMP	98	Echo (ping) req
14	3.060339245	172.217.14.196	10.0.2.15	ICMP	98	Echo (ping) rep
15	4.035348428	10.0.2.15	172.217.14.196	ICMP	98	Echo (ping) req
16	4.066948880	172.217.14.196	10.0.2.15	ICMP	98	Echo (ping) rep
17	5.038410363	10.0.2.15	172.217.14.196	ICMP	98	Echo (ping) req
18	5.059079456	172.217.14.196	10.0.2.15	ICMP	98	Echo (ping) rep
19	5.252392277	PcsCompu_4a:49:f1	RealtekU_12:35:02	ARP	42	Who has 10.0.2.

Frame 16: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface enp0s3, id 0

Ethernet II, Src: RealtekU_12:35:02 (52:54:00:12:35:02), Dst: PcsCompu_4a:49:f1 (08:00:27:4a:49:f1)

Destination: PcsCompu_4a:49:f1 (08:00:27:4a:49:f1)

Source: RealtekU_12:35:02 (52:54:00:12:35:02)

Type: IPv4 (0x0800)

Internet Protocol Version 4, Src: 172.217.14.196, Dst: 10.0.2.15

Internet Control Message Protocol

0000 08 00 27 4a 49 f1 52 54 00 12 35 02 08 00 45 00 ..'JI·RT·5...E·

0010 00 54 d8 fa 00 00 72 01 a8 02 ac d9 0e c4 0a 00 ·T····r·····

0020 02 0f 00 00 6e 1a 00 01 00 05 90 39 3b 63 00 00 ···n···9;c···

0030 00 00 03 70 04 00 00 00 00 10 11 12 13 14 15 ···p·····

0040 16 17 18 19 1a 1b 1c 1d 1e 1f 20 21 22 23 24 25 ······!"#\$%

0050 26 27 28 29 2a 2b 2c 2d 2e 2f 30 31 32 33 34 35 &'()*+,-./012345

0060 36 37 67

Bytes 42-49:...p.data_time Packets: 1304 · Displayed: 1304 (100.0%) · Dropped: 0 (0.0%) Profile: Default

Wireshark Response (ping www.google.com)


Netsim #2

← → ↻ netsim.erinn.io

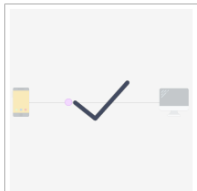
Welcome to Netsim! If this is your first time playing, we recommend you start from the first level below, and work your way forward. [Log out](#)

Please note that this project is still in **beta**. If you find any bugs, you can report them to [@errorinn](#) or open an issue on [Github](#).

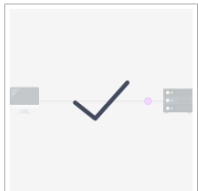
Basics




Getting started



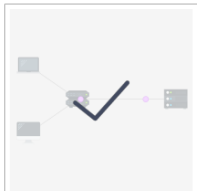
Packet fields



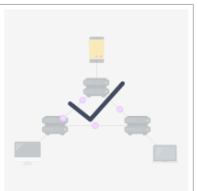
Ping




Routing



Modems




IP Spoofing




Stealing packets


Denial of Service



Basic DoS



Distributed DoS




Smurf attack

Ln 1, Col 6 | 100% | Windows (CRLF) | UTF-8


Ln 1, Col 6 | 100% | Windows (CRLF) | UTF-8

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Denial of Service



Basic DoS

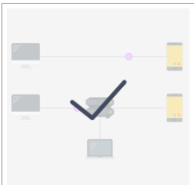


Distributed DoS




Smurf attack


Attacks



Man-in-the-middle



Censorship



Traceroute

*Untitled - Notepad

File Edit View


ODIN:vkariñe

Ln 1, Col 6 | 100% | Windows (CRLF) | UTF-8

← → ↻ netsim.erinn.io/?level=undefined

Netsim

Congratulations!
You beat the last level in the game!



*Untitled - Notepad

File Edit View

ODIN:vkariñe

Ln 1, Col 6 | 100% | Windows (CRLF) | UTF-8

Cloud Computing

Network Scanning

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VM instances are highly configurable virtual machines for running workloads on Google infrastructure. [Learn more](#)

Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In t	Connect
<input type="checkbox"/>	✓	instance-1	us-west1-c			SSH

Related actions [HIDE](#)

Select an instance

PERMISSIONS LABELS MONITORING

Please select at least one resource.

Launch Targets

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Filter Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	Connect
<input type="checkbox"/>	✓	instance-1	us-west1-c		SSH
<input type="checkbox"/>	✓	wordpress-multisite-1-vm	us-west1-c		SSH
<input type="checkbox"/>	✓	wordpress-redis-1-vm	us-west1-c		SSH
<input type="checkbox"/>	✓	wordpress4-lemp7-1-vm	us-west1-c		SSH

Related actions [HIDE](#)

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Please select at least one resource.

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Filter Enter property name or value

Name	Recommendations	In use by	Internal IP	External IP	Connect
-			10.138.0.2	34.82.250.229	SSH
ist1-c			(nic0)	(nic0)	
-			10.138.0.3	34.145.94.8	SSH
ist1-c			(nic0)	(nic0)	
-			10.138.0.5	35.247.109.116	SSH
ist1-c			(nic0)	(nic0)	
-			10.138.0.4	35.230.18.6	SSH
ist1-c			(nic0)	(nic0)	

Select an instance

PERMISSIONS

LABELS

MONITORING

Please select at least one resource.

Scan targets for Services

Show a screenshot of the output for the scan for your lab notebook.



SSH-in-browser

```

Setting up nmap-common (7.80+dfsg1-2build1) ...
Setting up liblua5.3-0:amd64 (5.3.3-1.1ubuntu2) ...
Setting up liblinear4:amd64 (2.3.0+dfsg-3build1) ...
Setting up nmap (7.80+dfsg1-2build1) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
vkarinje@instance-1:~$ nmap 10.138.0.2/24
Starting Nmap 7.80 ( https://nmap.org ) at 2022-10-04 03:05 UTC
Nmap scan report for instance-1.c.cloud-cs-530-karinje-vkarinje.internal (10.138.0.2)
Host is up (0.00020s latency).
Not shown: 999 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh

Nmap scan report for wordpress-multisite-1-vm.c.cloud-cs-530-karinje-vkarinje.internal (10.138.0.3)
Host is up (0.00049s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
80/tcp    open  http
443/tcp   open  https

Nmap scan report for wordpress4-lemp7-1-vm.c.cloud-cs-530-karinje-vkarinje.internal (10.138.0.4)
Host is up (0.00049s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
80/tcp    open  http
3306/tcp  open  mysql

Nmap scan report for wordpress-redis-1-vm.c.cloud-cs-530-karinje-vkarinje.internal (10.138.0.5)
Host is up (0.00023s latency).
Not shown: 997 closed ports
PORT      STATE SERVICE
22/tcp    open  ssh
80/tcp    open  http
10000/tcp open  snet-sensor-mgmt

Nmap done: 256 IP addresses (4 hosts up) scanned in 3.05 seconds
vkarinje@instance-1:~$

```

Clean -up

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Deployment Manager | Deployments | [DEPLOY MARKETPLACE SOLUTION](#) | [STOP](#) | [DELETE](#) | [HIDE INFO PANEL](#)

Deployments

Type registry

[Learn how to convert your deployment to KRM or Terraform](#)

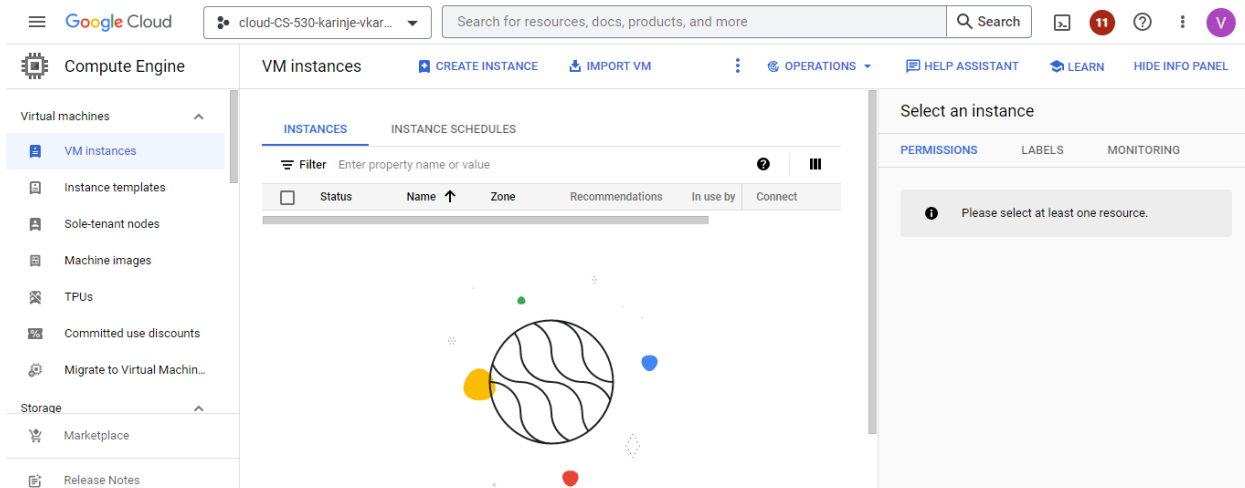
Filter Filter deployments

<input type="checkbox"/>	Name	Created on	Last modified	Labels
No rows to display				

Select a deployment

Labels help organize your resources (e.g., cost_center:sales or env:prod).

No deployments selected.



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Filter Enter property name or value

Status	Name	Zone	Recommendations	In use by	Connect

Select an instance

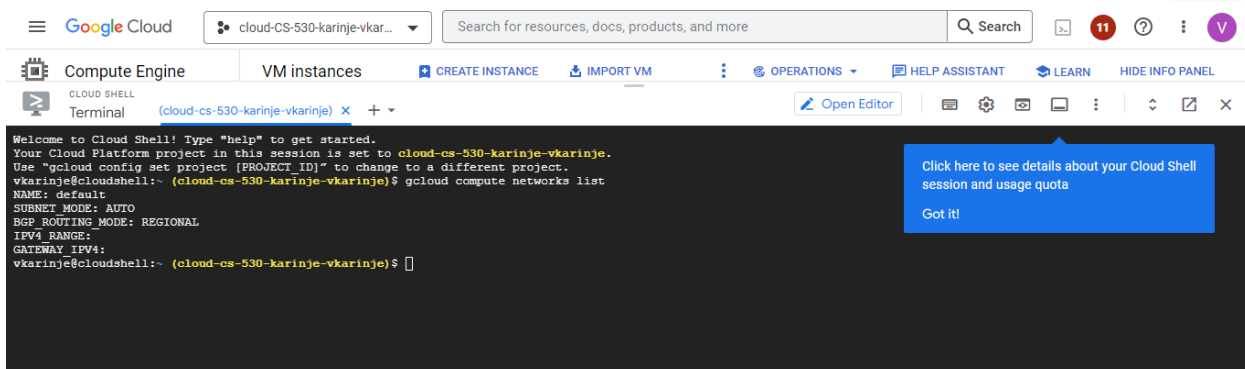
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Please select at least one resource.

Compute Networks list



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CLOUD SHELL

Terminal

(cloud-CS-530-karinje-vkarinje)

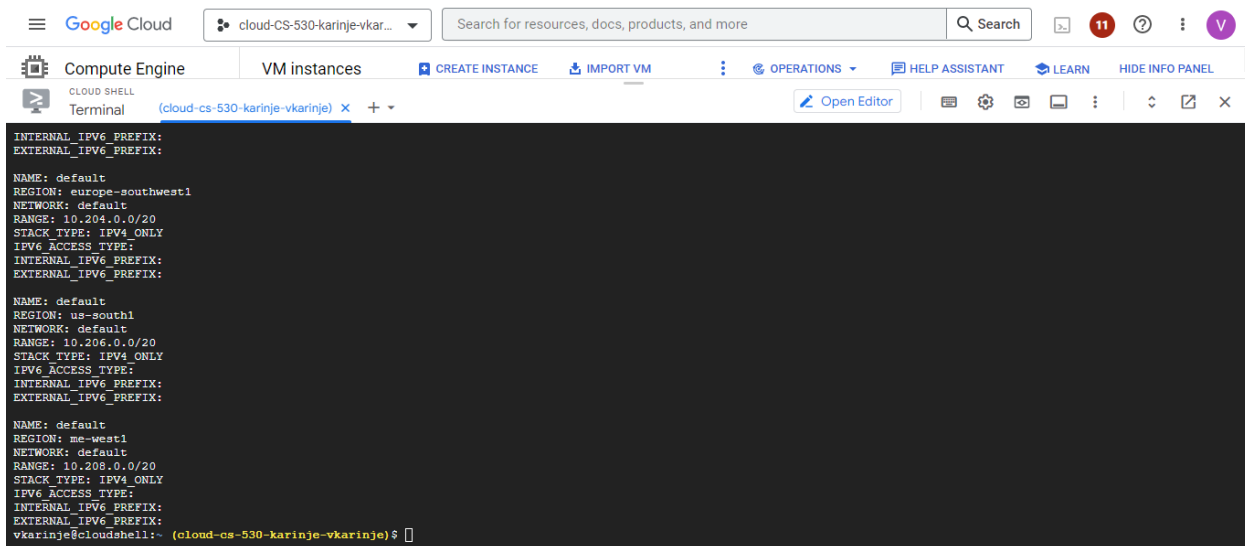
Open Editor

Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to cloud-CS-530-karinje-vkarinje.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
vkarinje@cloudshell:~ (cloud-CS-530-karinje-vkarinje) \$ gcloud compute networks list
NAME: default
SUBNET MODE: AUTO
BGP ROUTING MODE: REGIONAL
IPV4 RANGE:
GATEWAY IPV4:
vkarinje@cloudshell:~ (cloud-CS-530-karinje-vkarinje) \$

Click here to see details about your Cloud Shell session and usage quota

Got it!

List of subnets



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CLOUD SHELL

Terminal

(cloud-CS-530-karinje-vkarinje)

Open Editor

INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: europe-southwest1
NETWORK: default
RANGE: 10.204.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-south1
NETWORK: default
RANGE: 10.206.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: me-west1
NETWORK: default
RANGE: 10.208.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:
vkarinje@cloudshell:~ (cloud-CS-530-karinje-vkarinje) \$

Click here to see details about your Cloud Shell session and usage quota

Got it!

Answer the following questions in your lab notebook:

How many subnetworks are created initially on the default network? How many regions does this correspond to? (Use a pipe to pass output to `grep` in order to return specific lines of output and then another to pass output to `wc` to count them: `| grep default | wc -l`)

Ans:

`gcloud compute networks subnets list | grep default | wc -l`

```
EXTERNAL_IPV6_PREFIX:
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks subnets list | grep default | wc -l
70
```

There are 70 subnets created initially on the default network

`gcloud compute networks subnets list | grep REGION | wc -l`

```
70
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks subnets list | grep REGION | wc -l
35
```

There are 35 regions

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks subnets list | grep REGION
REGION: us-central1
REGION: europe-west1
REGION: us-west1
REGION: asia-east1
REGION: us-east1
REGION: asia-northeast1
REGION: asia-southeast1
REGION: us-east4
REGION: australia-southeast1
REGION: europe-west2
REGION: europe-west3
REGION: southamerica-east1
REGION: asia-south1
REGION: northamerica-northeast1
REGION: europe-west4
REGION: europe-north1
REGION: us-west2
REGION: asia-east2
REGION: europe-west6
REGION: asia-northeast2
REGION: asia-northeast3
REGION: us-west3
REGION: us-west4
REGION: asia-southeast2
REGION: europe-central2
REGION: northamerica-northeast2
REGION: asia-south2
REGION: australia-southeast2
REGION: southamerica-west1
REGION: europe-west8

```

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

Ans: Each subnetwork supports 4094 hosts

Creating two instances in two different zones

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute instances create instance-1 --zone us-west1-a
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/zones/us-west1-a/instances/instance-1].
NAME: instance-1
ZONE: us-west1-a
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.138.0.8
EXTERNAL_IP: 35.247.109.116
STATUS: RUNNING

```

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute instances create instance-2 --zone us-west1-c
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/zones/us-west1-c/instances/instance-2].
NAME: instance-2
ZONE: us-west1-c
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.138.0.9
EXTERNAL_IP: 34.82.250.229
STATUS: RUNNING

```


Listing of the instances created

```
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute instances list
NAME: instance-1
ZONE: us-west1-a
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.138.0.8
EXTERNAL_IP: 35.247.109.116
STATUS: RUNNING

NAME: instance-2
ZONE: us-west1-c
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 10.138.0.9
EXTERNAL_IP: 34.82.250.229
STATUS: RUNNING
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$
```

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

Ans: Instance 1 is brought up in 10.138.0.8 and instance 2 is brought up in 10.138.0.9. Yes, they do correspond to the appropriate region based on the prior commands.

The screenshot shows the Google Cloud console interface. The left sidebar is titled 'Compute Engine' and lists 'Virtual machines' with sub-items: 'VM instances', 'Instance templates', 'Sole-tenant nodes', 'Machine images', 'TPUs', and 'Committed use discounts'. The main content area is titled 'VM instances' and includes a search bar, a 'Filter' dropdown, and a table of instances. The table has columns: Name, Zone, Recommendations, In use by, Internal IP, and Connect. It lists two instances: 'instance-1' (Zone: us-west1-a, Internal IP: 10.138.0.8) and 'instance-2' (Zone: us-west1-c, Internal IP: 10.138.0.9). The right sidebar is titled 'Select an instance' and has tabs for 'PERMISSIONS', 'LABELS', and 'MONITORING'. A message at the bottom of the right sidebar says 'Please select at least one resource.'

Name	Zone	Recommendations	In use by	Internal IP	Connect
instance-1	us-west1-a			10.138.0.8 (nic0)	SSH
instance-2	us-west1-c			10.138.0.9 (nic0)	SSH

From **instance-1**, perform a **ping** to the **Internal IP** address of **instance-2**. Take a screenshot of the output.

```
vkarinje@instance-1:~$ ping 10.138.0.9
PING 10.138.0.9 (10.138.0.9) 56(84) bytes of data.
64 bytes from 10.138.0.9: icmp_seq=1 ttl=64 time=1.26 ms
64 bytes from 10.138.0.9: icmp_seq=2 ttl=64 time=0.285 ms
64 bytes from 10.138.0.9: icmp_seq=3 ttl=64 time=0.289 ms
64 bytes from 10.138.0.9: icmp_seq=4 ttl=64 time=0.256 ms
64 bytes from 10.138.0.9: icmp_seq=5 ttl=64 time=0.333 ms
64 bytes from 10.138.0.9: icmp_seq=6 ttl=64 time=0.309 ms
64 bytes from 10.138.0.9: icmp_seq=7 ttl=64 time=0.451 ms
64 bytes from 10.138.0.9: icmp_seq=8 ttl=64 time=0.265 ms
64 bytes from 10.138.0.9: icmp_seq=9 ttl=64 time=0.270 ms
64 bytes from 10.138.0.9: icmp_seq=10 ttl=64 time=0.328 ms
64 bytes from 10.138.0.9: icmp_seq=11 ttl=64 time=0.246 ms
64 bytes from 10.138.0.9: icmp_seq=12 ttl=64 time=0.264 ms
64 bytes from 10.138.0.9: icmp_seq=13 ttl=64 time=0.270 ms
64 bytes from 10.138.0.9: icmp_seq=14 ttl=64 time=0.274 ms
64 bytes from 10.138.0.9: icmp_seq=15 ttl=64 time=0.343 ms
64 bytes from 10.138.0.9: icmp_seq=16 ttl=64 time=0.333 ms
64 bytes from 10.138.0.9: icmp_seq=17 ttl=64 time=0.401 ms
64 bytes from 10.138.0.9: icmp_seq=18 ttl=64 time=0.337 ms
64 bytes from 10.138.0.9: icmp_seq=19 ttl=64 time=0.334 ms
64 bytes from 10.138.0.9: icmp_seq=20 ttl=64 time=0.272 ms
64 bytes from 10.138.0.9: icmp_seq=21 ttl=64 time=0.246 ms
64 bytes from 10.138.0.9: icmp_seq=22 ttl=64 time=0.256 ms
64 bytes from 10.138.0.9: icmp_seq=23 ttl=64 time=0.263 ms
64 bytes from 10.138.0.9: icmp_seq=24 ttl=64 time=0.282 ms
64 bytes from 10.138.0.9: icmp_seq=25 ttl=64 time=0.289 ms
64 bytes from 10.138.0.9: icmp_seq=26 ttl=64 time=0.284 ms
64 bytes from 10.138.0.9: icmp_seq=27 ttl=64 time=0.306 ms
64 bytes from 10.138.0.9: icmp_seq=28 ttl=64 time=0.257 ms
64 bytes from 10.138.0.9: icmp_seq=29 ttl=64 time=0.271 ms
```

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

Ans: Virtual Switch facilitates this connectivity

Custom Networking

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks create custom-network1 --subnet-mode custom
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/global/networks/custom-network1].
NAME: custom-network1
SUBNET_MODE: CUSTOM
BGP_ROUTING_MODE: REGIONAL
IPV4_RANGE:
GATEWAY_IPV4:

Instances on this network will not be reachable until firewall rules
are created. As an example, you can allow all internal traffic between
instances as well as SSH, RDP, and ICMP by running:

$ gcloud compute firewall-rules create <FIREWALL_NAME> --network custom-network1 --allow tcp,udp,icmp --source-ranges <IP_RANGE>
$ gcloud compute firewall-rules create <FIREWALL_NAME> --network custom-network1 --allow tcp:22,tcp:3389,icmp

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ █

```

Use a command from the previous step to list both the default and custom networks. Include a screenshot of it for your lab notebook.

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks list
NAME: custom-network1
SUBNET_MODE: CUSTOM
BGP_ROUTING_MODE: REGIONAL
IPV4_RANGE:
GATEWAY_IPV4:

NAME: default
SUBNET_MODE: AUTO
BGP_ROUTING_MODE: REGIONAL
IPV4_RANGE:
GATEWAY_IPV4:
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ █

```

Creating two custom subnetworks within custom-network1 in regions us-central1 and europe-west1

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks subnets create subnet-us-central-192 \
--network custom-network1 \
--region us-central1 \
--range 192.168.1.0/24
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/regions/us-central1/subnetworks/subnet-us-central-192].
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:
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks subnets create subnet-europe-west-192 \
--network custom-network1 \
--region europe-west1 \
--range 192.168.5.0/24
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/regions/europe-west1/subnetworks/subnet-europe-west-192].
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:
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$

```

Use a command from the previous step to list the subnetworks

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

```


vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute networks subnets list
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:


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

```

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```
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:


NAME: default
REGION: us-west1
NETWORK: default
RANGE: 10.138.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:










NAME: default
REGION: asia-east1
NETWORK: default
RANGE: 10.140.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-east1
NETWORK: default
```

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```
NAME: default
REGION: us-east1
NETWORK: default
RANGE: 10.142.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:


NAME: default
REGION: asia-northeast1
NETWORK: default
RANGE: 10.146.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:












NAME: default
REGION: asia-southeast1
NETWORK: default
RANGE: 10.148.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-east4
NETWORK: default
```

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```
NAME: default
REGION: us-east4
NETWORK: default
RANGE: 10.150.0.0/20
STACK_TYPE: IPV4 ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:


NAME: default
REGION: australia-southeast1
NETWORK: default
RANGE: 10.152.0.0/20
STACK_TYPE: IPV4 ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:












NAME: default
REGION: europe-west2
NETWORK: default
RANGE: 10.154.0.0/20
STACK_TYPE: IPV4 ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: europe-west3
NETWORK: default
```

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```
NAME: default
REGION: europe-west3
NETWORK: default
RANGE: 10.156.0.0/20
STACK_TYPE: IPV4 ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: southamerica-east1
NETWORK: default
RANGE: 10.158.0.0/20
STACK_TYPE: IPV4 ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: asia-south1
NETWORK: default
RANGE: 10.160.0.0/20
STACK_TYPE: IPV4 ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: northamerica-northeast1
NETWORK: default
```

```

NAME: default
REGION: northamerica-northeast1
NETWORK: default
RANGE: 10.162.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

```

```

NAME: default
REGION: europe-west4
NETWORK: default
RANGE: 10.164.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

```

```

NAME: default
REGION: europe-north1
NETWORK: default
RANGE: 10.166.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

```

```

NAME: default
REGION: us-west2
NETWORK: default

```

```

NAME: default
REGION: us-west2
NETWORK: default
RANGE: 10.168.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

```

```

NAME: default
REGION: asia-east2
NETWORK: default
RANGE: 10.170.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

```

```


NAME: default
REGION: europe-west6
NETWORK: default
RANGE: 10.172.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

```

```

NAME: default
REGION: asia-northeast2
NETWORK: default

```

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```
NAME: default
REGION: asia-northeast2
NETWORK: default
RANGE: 10.174.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: asia-northeast3
NETWORK: default
RANGE: 10.178.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-west3
NETWORK: default
RANGE: 10.180.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-west4
NETWORK: default
RANGE: 10.182.0.0/20
```

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```
NAME: default
REGION: us-west4
NETWORK: default
RANGE: 10.182.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:


NAME: default
REGION: asia-southeast2
NETWORK: default
RANGE: 10.184.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:










NAME: default
REGION: europe-central2
NETWORK: default
RANGE: 10.186.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: northamerica-northeast2
NETWORK: default
RANGE: 10.188.0.0/20
```


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```
NAME: default
REGION: northamerica-northeast2
NETWORK: default
RANGE: 10.188.0.0/20
STACK TYPE: IPV4 ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:


NAME: default
REGION: asia-south2
NETWORK: default
RANGE: 10.190.0.0/20
STACK TYPE: IPV4 ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:










NAME: default
REGION: australia-southeast2
NETWORK: default
RANGE: 10.192.0.0/20
STACK TYPE: IPV4 ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: southamerica-west1
NETWORK: default
RANGE: 10.194.0.0/20
```

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```
NAME: default
REGION: southamerica-west1
NETWORK: default
RANGE: 10.194.0.0/20
STACK TYPE: IPV4 ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: europe-west8
NETWORK: default
RANGE: 10.198.0.0/20
STACK TYPE: IPV4 ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: europe-west9
NETWORK: default
RANGE: 10.200.0.0/20
STACK TYPE: IPV4 ONLY
IPV6 ACCESS TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-east5
NETWORK: default
RANGE: 10.202.0.0/20
```

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```
NAME: default
REGION: us-east5
NETWORK: default
RANGE: 10.202.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: europe-southwest1
NETWORK: default
RANGE: 10.204.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: us-south1
NETWORK: default
RANGE: 10.206.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:

NAME: default
REGION: me-west1
NETWORK: default
```

```
NAME: default
REGION: me-west1
NETWORK: default
RANGE: 10.208.0.0/20
STACK_TYPE: IPV4_ONLY
IPV6_ACCESS_TYPE:
INTERNAL_IPV6_PREFIX:
EXTERNAL_IPV6_PREFIX:
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje) $
```

Create instances in each custom subnetwork you've created

```

vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute instances create instance-3 \
--zone us-central1-a \
--subnet subnet-us-central-192
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/zones/us-central1-a/instances/instance-3].
NAME: instance-3
ZONE: us-central1-a
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 192.168.1.2
EXTERNAL_IP: 34.70.120.145
STATUS: RUNNING
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$ gcloud compute instances create instance-4 \
--zone europe-west1-d \
--subnet subnet-europe-west-192
Created [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/zones/europe-west1-d/instances/instance-4].
NAME: instance-4
ZONE: europe-west1-d
MACHINE_TYPE: n1-standard-1
PREEMPTIBLE:
INTERNAL_IP: 192.168.5.2
EXTERNAL_IP: 34.79.208.162
STATUS: RUNNING
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje)$

```

Find the Internal IP addresses for both instances.

IP address for instance-3 : 192.168.1.2

IP address for instance -4: 192.168.5.2

The screenshot shows the Google Cloud console interface for VM instances. The left sidebar shows the navigation menu with 'VM instances' selected. The main content area displays a table of VM instances. The table has columns for Name, Zone, Recommendations, In use by, Internal IP, and Connect. There are four instances listed, with the last two (instance-3 and instance-4) having internal IP addresses of 192.168.1.2 and 192.168.5.2 respectively.

Name	Zone	Recommendations	In use by	Internal IP	Connect
instance-1	us-west1-a			10.138.0.8 (nic0)	SSH
instance-2	us-west1-c			10.138.0.9 (nic0)	SSH
instance-3	us-central1-a			192.168.1.2 (nic0)	SSH
instance-4	europe-west1-d			192.168.5.2 (nic0)	SSH

Perform a ping from instance-1 to the Internal IP addresses of instance-3 and instance-4

```

vkarinje@instance-1:~$ ping 192.168.1.2
PING 192.168.1.2 (192.168.1.2) 56(84) bytes of data.
^C
--- 192.168.1.2 ping statistics ---
23 packets transmitted, 0 received, 100% packet loss, time 22507ms

vkarinje@instance-1:~$ 

```

```

vkarinje@instance-1:~$ ping 192.168.5.2
PING 192.168.5.2 (192.168.5.2) 56(84) bytes of data.
^C
--- 192.168.5.2 ping statistics ---
9 packets transmitted, 0 received, 100% packet loss, time 8189ms

vkarinje@instance-1:~$ 

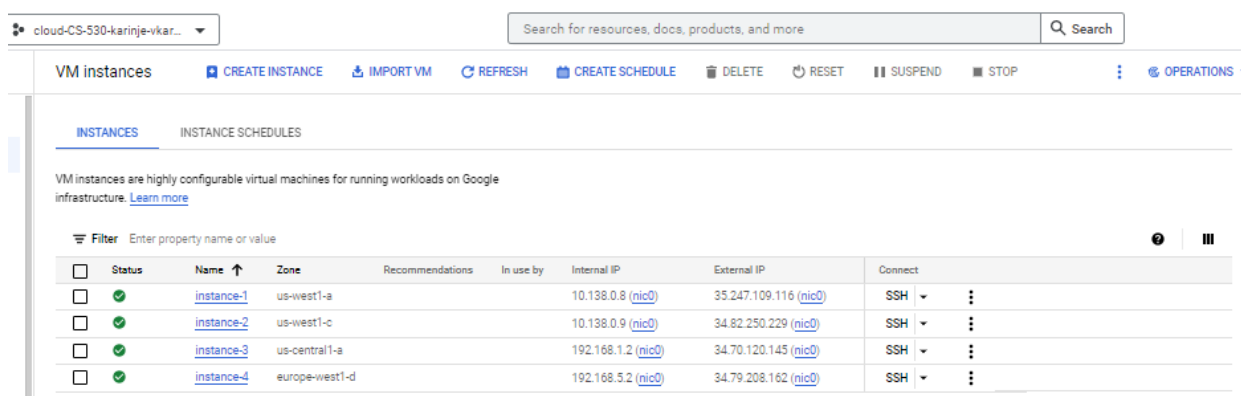
```

Explain why the result is different from instance-2.

Ans: The result is different from instance-2 because instance-1 and instance-2 were in the same regions but different zones.

Instance 3 and instance 4 are in different regions and cannot be connected by instance 1. As they are in different networks we have to allow network peering to connect them.

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



Filter	Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
	✓	instance-1	us-west1-a			10.138.0.8 (nic0)	35.247.109.116 (nic0)	SSH
	✓	instance-2	us-west1-c			10.138.0.9 (nic0)	34.82.250.229 (nic0)	SSH
	✓	instance-3	us-central1-a			192.168.1.2 (nic0)	34.70.120.145 (nic0)	SSH
	✓	instance-4	eu-west-1-d			192.168.5.2 (nic0)	34.79.208.162 (nic0)	SSH

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

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VPC network

VPC networks CREATE VPC NETWORK REFRESH HELP ASSISTANT

Name	Region	Subnets	MTU	Mode	Internal IP ranges	External IP ranges	Secondary IPv4 ranges	Gateways	Firewall Rules	Global dynamic routing	Flow logs
▼ custom-network1		2	1460	Custom	None				0	Off	
	us-central1	subnet-us-central-192			192.168.1.0/24	None	None	192.168.1.1			Off
	europa-west1	subnet-europe-west-192			192.168.5.0/24	None	None	192.168.5.1			Off
▼ default		35	1460	Auto	None				4	Off	
	us-central1	default			10.128.0.0/20	None	None	10.128.0.1			Off
	europa-west1	default			10.132.0.0/20	None	None	10.132.0.1			Off
	us-west1	default			10.138.0.0/20	None	None	10.138.0.1			Off
	asia-east1	default			10.140.0.0/20	None	None	10.140.0.1			Off
	us-east1	default			10.142.0.0/20	None	None	10.142.0.1			Off
	asia-northeast1	default			10.146.0.0/20	None	None	10.146.0.1			Off
	asia-southeast1	default			10.148.0.0/20	None	None	10.148.0.1			Off
	us-east4	default			10.150.0.0/20	None	None	10.150.0.1			Off
	australia-southeast1	default			10.152.0.0/20	None	None	10.152.0.1			Off
	europa-west2	default			10.154.0.0/20	None	None	10.154.0.1			Off
	europa-west3	default			10.156.0.0/20	None	None	10.156.0.1			Off
	southamerica-east1	default			10.158.0.0/20	None	None	10.158.0.1			Off
	asia-south1	default			10.160.0.0/20	None	None	10.160.0.1			Off
	northamerica-northeast1	default			10.162.0.0/20	None	None	10.162.0.1			Off
	europa-west4	default			10.164.0.0/20	None	None	10.164.0.1			Off
	europa-north1	default			10.166.0.0/20	None	None	10.166.0.1			Off
	us-west2	default			10.168.0.0/20	None	None	10.168.0.1			Off
	asia-east2	default			10.170.0.0/20	None	None	10.170.0.1			Off
	europa-west6	default			10.172.0.0/20	None	None	10.172.0.1			Off
	asia-northeast2	default			10.174.0.0/20	None	None	10.174.0.1			Off
	asia-northeast3	default			10.178.0.0/20	None	None	10.178.0.1			Off
	us-west3	default			10.180.0.0/20	None	None	10.180.0.1			Off
	us-west4	default			10.182.0.0/20	None	None	10.182.0.1			Off
	asia-southeast2	default			10.184.0.0/20	None	None	10.184.0.1			Off
	europa-central2	default			10.186.0.0/20	None	None	10.186.0.1			Off
	northamerica-northeast2	default			10.188.0.0/20	None	None	10.188.0.1			Off
	asia-south2	default			10.190.0.0/20	None	None	10.190.0.1			Off
	australia-southeast2	default			10.192.0.0/20	None	None	10.192.0.1			Off
	southamerica-west1	default			10.194.0.0/20	None	None	10.194.0.1			Off
	europa-west8	default			10.198.0.0/20	None	None	10.198.0.1			Off
	europa-west9	default			10.200.0.0/20	None	None	10.200.0.1			Off
	us-east5	default			10.202.0.0/20	None	None	10.202.0.1			Off
	europa-southwest1	default			10.204.0.0/20	None	None	10.204.0.1			Off
	us-south1	default			10.206.0.0/20	None	None	10.206.0.1			Off
	me-west1	default			10.208.0.0/20	None	None	10.208.0.1			Off

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VPC networks CREATE VPC NETWORK REFRESH HELP ASSISTANT

australia-southeast1	default	10.152.0.0/20	None	None	10.152.0.1	Off
europa-west2	default	10.154.0.0/20	None	None	10.154.0.1	Off
europa-west3	default	10.156.0.0/20	None	None	10.156.0.1	Off
southamerica-east1	default	10.158.0.0/20	None	None	10.158.0.1	Off
asia-south1	default	10.160.0.0/20	None	None	10.160.0.1	Off
northamerica-northeast1	default	10.162.0.0/20	None	None	10.162.0.1	Off
europa-west4	default	10.164.0.0/20	None	None	10.164.0.1	Off
europa-north1	default	10.166.0.0/20	None	None	10.166.0.1	Off
us-west2	default	10.168.0.0/20	None	None	10.168.0.1	Off
asia-east2	default	10.170.0.0/20	None	None	10.170.0.1	Off
europa-west6	default	10.172.0.0/20	None	None	10.172.0.1	Off
asia-northeast2	default	10.174.0.0/20	None	None	10.174.0.1	Off
asia-northeast3	default	10.178.0.0/20	None	None	10.178.0.1	Off
us-west3	default	10.180.0.0/20	None	None	10.180.0.1	Off
us-west4	default	10.182.0.0/20	None	None	10.182.0.1	Off
asia-southeast2	default	10.184.0.0/20	None	None	10.184.0.1	Off
europa-central2	default	10.186.0.0/20	None	None	10.186.0.1	Off
northamerica-northeast2	default	10.188.0.0/20	None	None	10.188.0.1	Off
asia-south2	default	10.190.0.0/20	None	None	10.190.0.1	Off
australia-southeast2	default	10.192.0.0/20	None	None	10.192.0.1	Off
southamerica-west1	default	10.194.0.0/20	None	None	10.194.0.1	Off
europa-west8	default	10.198.0.0/20	None	None	10.198.0.1	Off
europa-west9	default	10.200.0.0/20	None	None	10.200.0.1	Off
us-east5	default	10.202.0.0/20	None	None	10.202.0.1	Off
europa-southwest1	default	10.204.0.0/20	None	None	10.204.0.1	Off
us-south1	default	10.206.0.0/20	None	None	10.206.0.1	Off
me-west1	default	10.208.0.0/20	None	None	10.208.0.1	Off

Clean up


```

CLOUD SHELL
Terminal (cloud-cs-530-karinje-vkarinje) x +
Open Editor

'--keep-disks' flag is given and specifies them for keeping. Deleting a disk is irreversible and any data on the disk will be lost.
- [instance-4] in [europe-west1-d]

Do you want to continue (Y/n)? Y

Deleted [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/zones/europe-west1-d/instances/instance-4].
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje) $ gcloud compute networks subnets delete subnet-us-central-192 --region us-central1
The following subnetworks will be deleted:
- [subnet-us-central-192] in [us-central1]

Do you want to continue (Y/n)? Y

Deleted [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/regions/us-central1/subnetworks/subnet-us-central-192].
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje) $ gcloud compute networks subnets delete subnet-europe-west-192 --region europe-west1
The following subnetworks will be deleted:
- [subnet-europe-west-192] in [europe-west1]

Do you want to continue (Y/n)? Y

Y
Deleted [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/regions/europe-west1/subnetworks/subnet-europe-west-192].
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje) $ Y
-bash: Y: command not found
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje) $ gcloud compute networks delete custom-network1
The following networks will be deleted:
- [custom-network1]

Do you want to continue (Y/n)? Y

Deleted [https://www.googleapis.com/compute/v1/projects/cloud-cs-530-karinje-vkarinje/global/networks/custom-network1].
vkarinje@cloudshell:~ (cloud-cs-530-karinje-vkarinje) $

```

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INSTANCES **INSTANCE SCHEDULES**

[Filter](#) Enter property name or value

<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Connect
<p>VM Instances</p>						

Select an instance

PERMISSIONS **LABELS** **MONITORING**

1 Please select at least one resource.

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VPC network

VPC networks

CREATE VPC NETWORK

REFRESH

HELP ASSISTANT

VPC networks

IP addresses

Bring your own IP

Firewall

Routes

VPC network peering

Shared VPC

Serverless VPC access

Packet mirroring

Name ↑	Region	Subnets	MTU ?	Mode	Internal IP ranges	External IP ranges	Secondary IPv4 ranges	Gateways
▼ default		35	1460	Auto	None			
	us-central1	default			10.128.0.0/20	None	None	10.128.0.1
	europa-west1	default			10.132.0.0/20	None	None	10.132.0.1
	us-west1	default			10.138.0.0/20	None	None	10.138.0.1
	asia-east1	default			10.140.0.0/20	None	None	10.140.0.1
	us-east1	default			10.142.0.0/20	None	None	10.142.0.1
	asia-northeast1	default			10.146.0.0/20	None	None	10.146.0.1
	asia-southeast1	default			10.148.0.0/20	None	None	10.148.0.1
	us-east4	default			10.150.0.0/20	None	None	10.150.0.1
	australia-southeast1	default			10.152.0.0/20	None	None	10.152.0.1
	europa-west2	default			10.154.0.0/20	None	None	10.154.0.1
	europa-west3	default			10.156.0.0/20	None	None	10.156.0.1