

# VPC-Service-task-1

- Setup 1 custom VPC and subnet
- Create 1 VM with no public IP
- Try connecting to the internet from the VM
- Setup Cloud NAT in VPC
- Try connecting to the internet from the VM
- Delete internet gateway route from VPC
- Try connecting to the internet from VM

## CONCEPTS-

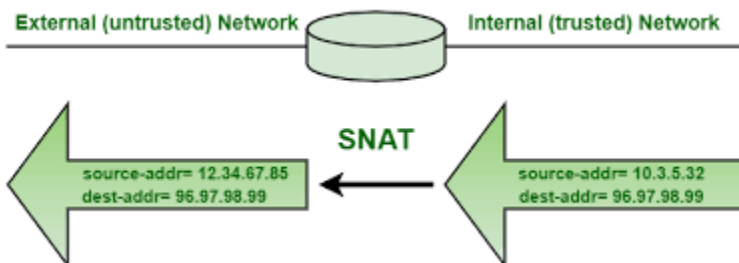
Cloud NAT - Network Address Translation

If you don't have an external IP address, how would you update/install on your instances?

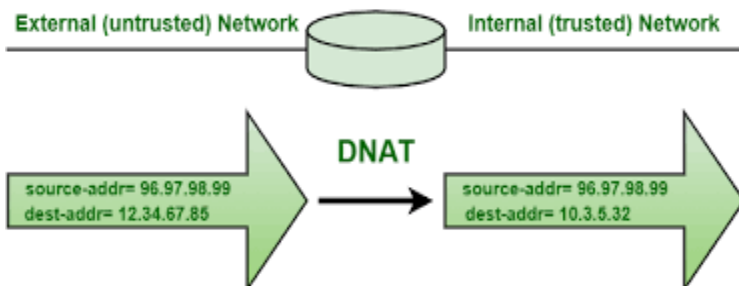
How would you access

- Google services like GCS - using Google private access
- Third party services like Cloud SQL, memory store, vertex AI- using private service access
- Sudo apt update- using Cloud NAT
- Reach anywhere on internet - using Cloud NAT

Cloud NAT allows VM to connect to the internet with just an internal ip address. it implements outbound NAT in conjunction with static routes in your VPC network whose next hops are the default internet gateway.

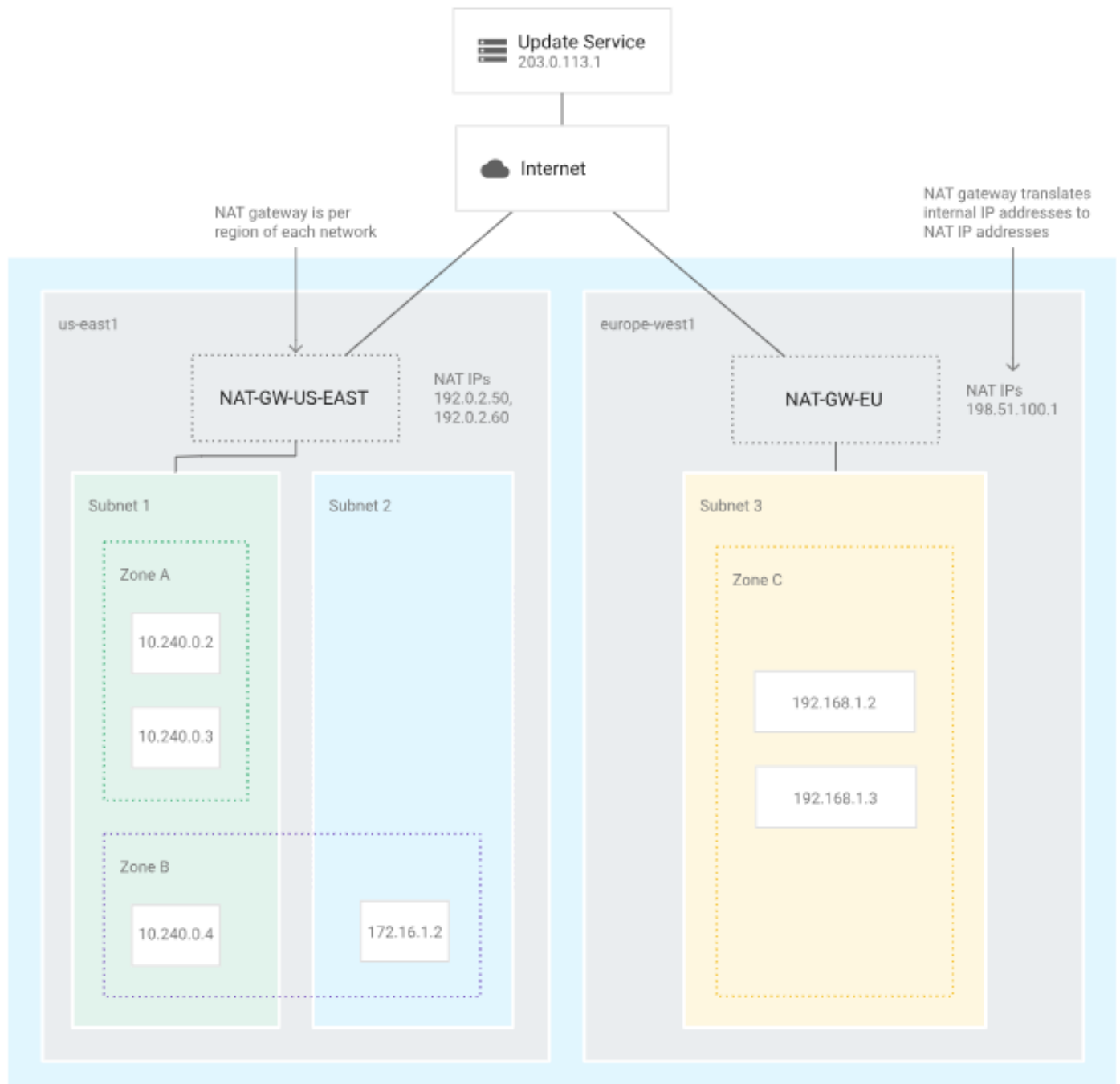


SNAT(source) is a technique that translates source IP address generally when connecting from private IP address to public IP address. ~used when an internal host needs to initiate a session to an external host or public host.



DNAT(destination) is a technique that translates destination IP addresses generally when connecting from public IP address to private IP address.

~It is generally used to redirect packets destined for specific IP address or specific port on IP address, on one host simply to a different address mostly on different hosts.



Cloud NAT (click to enlarge)

## IMPLEMENTATION-

First create the Custom-vpc with a subnet in it. Let us name it as vpc-e.  
Parallel create the nat-vm in vpc-e providing no external ip address to it.

Primary internal IPv4 address  
Ephemeral (Automatic)

Alias IP ranges

+ ADD IP RANGE

External IPv4 address  
None

DONE

VM would look like this.

Filter Enter property name or value								
<input type="checkbox"/>	Status	Name ↑	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input type="checkbox"/>		<a href="#">nat-vm</a>	us-central1-a			10.0.5.3 ( <a href="#">nic0</a> )		SSH ▾ ⋮

Now try to ping google.com in nat-vm → it will not work because there is no external ip through which the packet goes out from the internet gateway

```
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
```

```
Last login: Thu Aug 17 06:34:27 2023 from 35.235.245.129
```

```
lakshya_datir2001@nat-vm:~$ ping google.com
```

```
PING google.com (74.125.202.113) 56(84) bytes of data.
```

Now setup the Cloud nat →

Gateway name \*

nat-vpc-e

?

Lowercase letters, numbers, hyphens allowed

Select Cloud Router ?

Network \*

vpc-e

▼

Region \*

us-central1 (Iowa)

▼

?

One subnet.

Cloud Router \*

vm-router

▼

?

Cloud NAT mapping ?

Source (internal)

Primary and secondary ranges for all subnets

▼

?

Select which subnets to map to the Cloud NAT gateway. Primary IP addresses are used by VM instances and secondary IP addresses are used by container pods. [Learn more](#)

Cloud NAT IP addresses

Automatic (recommended)

▼

?

Network Service Tier ?

☐ Premium (Current project-level tier, [change](#)) ?

☒ Standard ?

Destination (external)

Internet

▼ ADVANCED CONFIGURATIONS

CREATE

CANCEL

Name- provide a name to Gateway

Network-select vpc-e & region

Router- you have to create the router in that specific vpc and region , if you haven't made it earlier.

Ip address -Give the ip address to NAT gateway automatic (recommended)

Network Service Tier -standard as we don't require to do much work.

The Nat would show the status of running

<input type="checkbox"/>	Gateway name <span>↑</span>	Region	Cloud router	Status	
<input type="checkbox"/>	<a href="#">nat-vpc-e</a>	us-central1	<a href="#">vm-router</a>	<span>✓</span> Running	<span>⋮</span>

Now try to ping, it would work.

```
lakshya_datir2001@instance-1-b:~$ ping google.com
PING google.com (209.85.145.138) 56(84) bytes of data.
64 bytes from jd-in-f138.1e100.net (209.85.145.138): icmp_seq=1 ttl=115
time=1.42 ms
64 bytes from jd-in-f138.1e100.net (209.85.145.138): icmp_seq=2 ttl=115
time=0.936 ms
64 bytes from jd-in-f138.1e100.net (209.85.145.138): icmp_seq=3 ttl=115
time=1.23 ms
```