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-

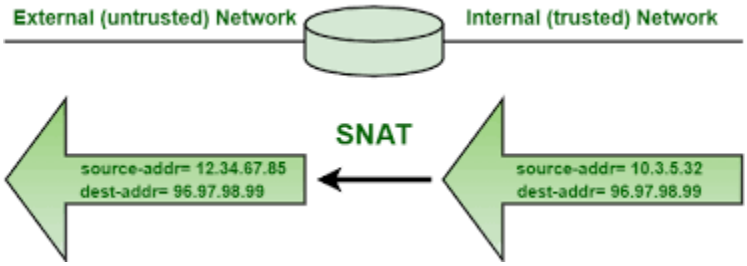
Cloud NAT - Network Address Translation

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

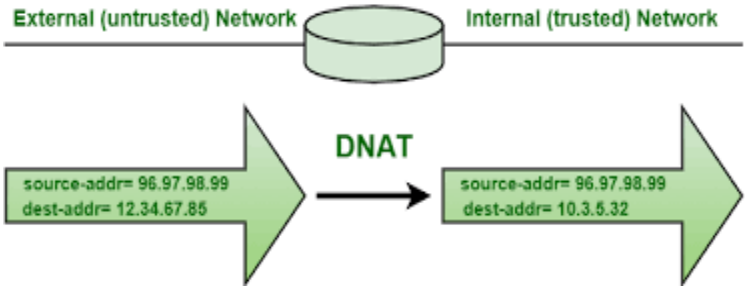
How would you access

- 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

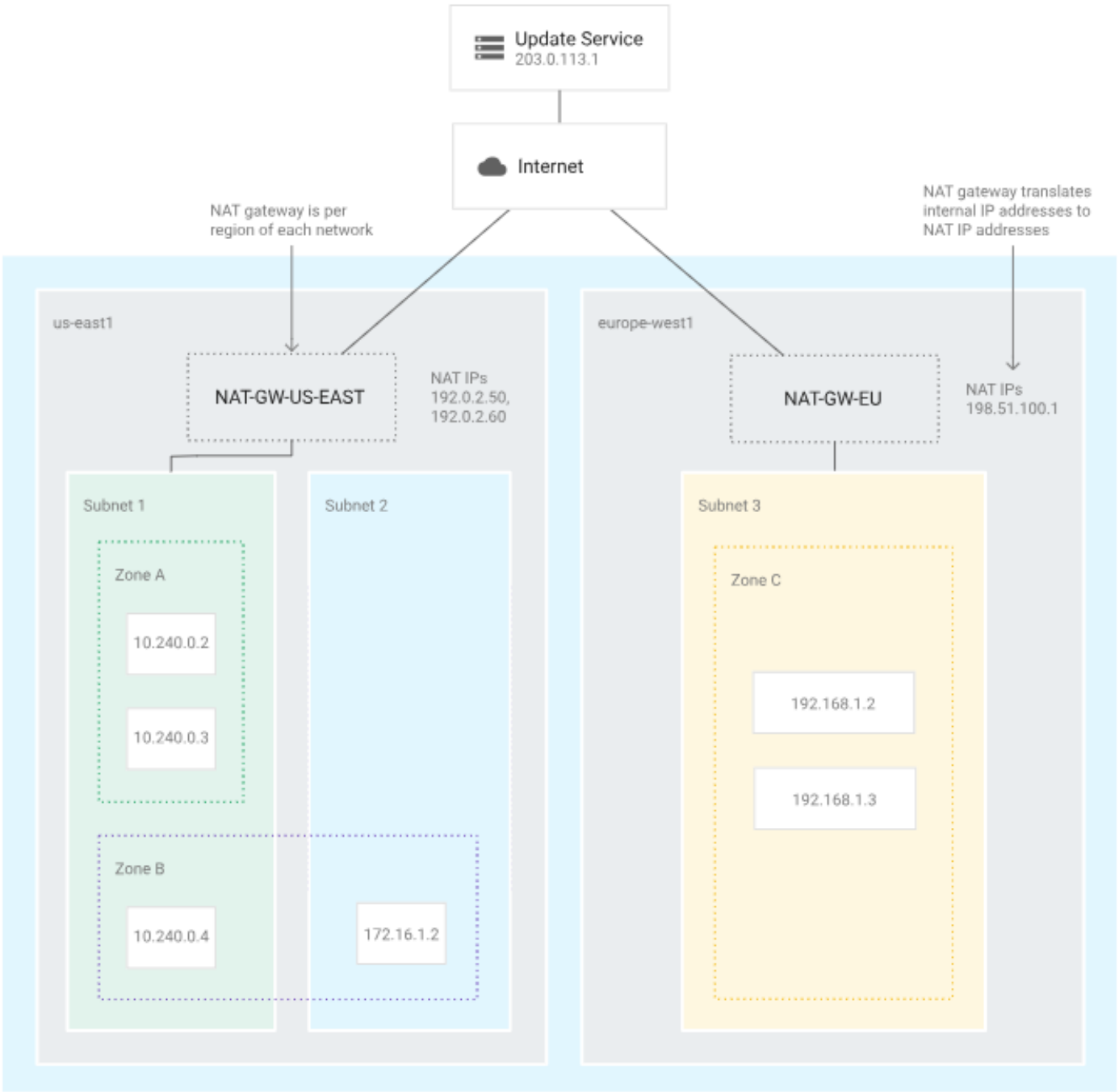
Cloud NAT allows VM to connect to the internet with just an internal ip address. it implements outbound NAT in conjunction with static routes in your VPC network whose next hops are the default internet gateway.



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.



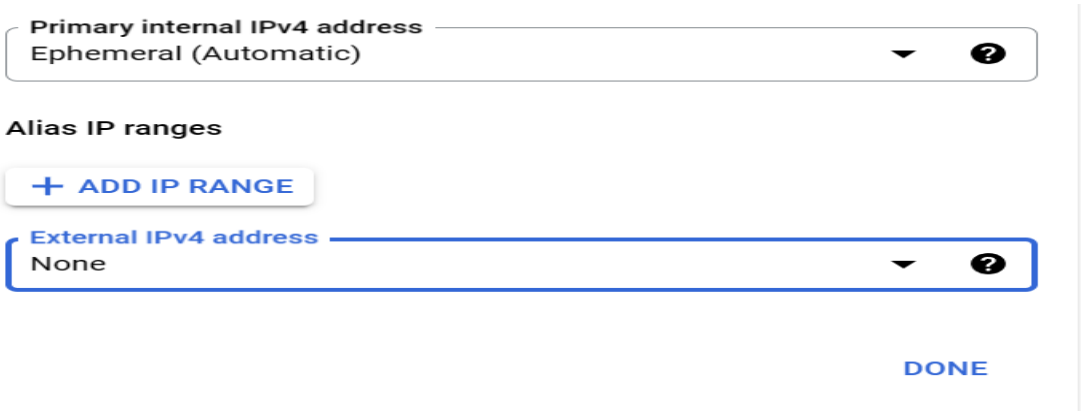
DNAT(destination) is a technique that translates destination IP addresses generally when connecting from public IP address to private IP address.
~It is generally used to redirect packets destined for specific IP address or specific port on IP address, on one host simply to a different address mostly on different hosts.



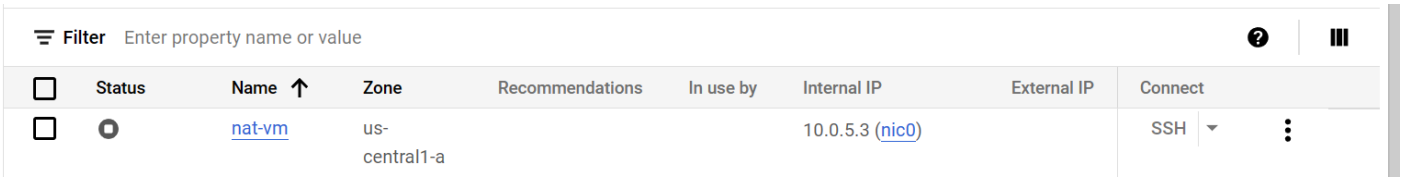
Cloud NAT (click to enlarge)

IMPLEMENTATION-

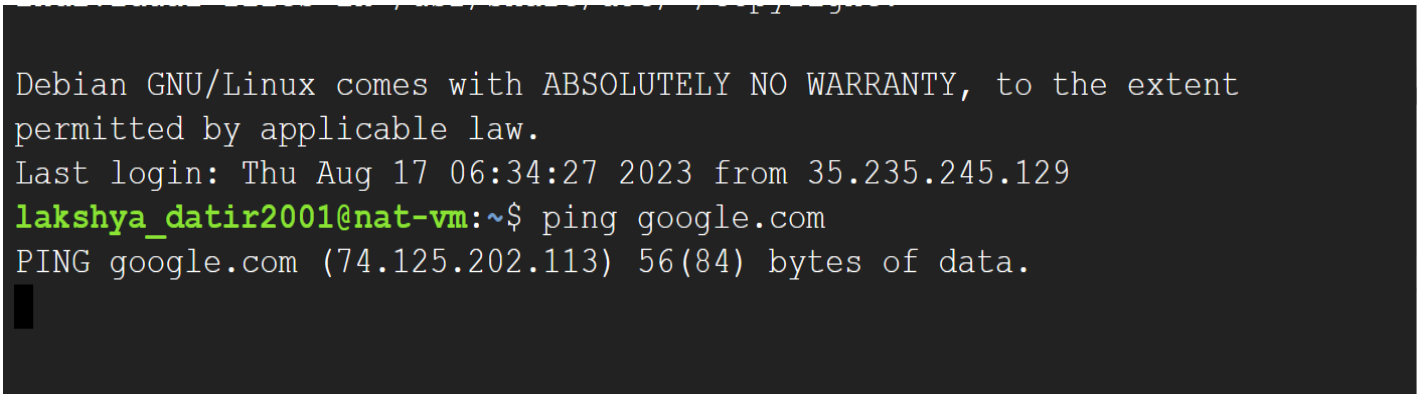
First create the Custom-vpc with a subnet in it. Let us name it as vpc-e.
Parallel create the nat-vm in vpc-e providing no external ip address to it.



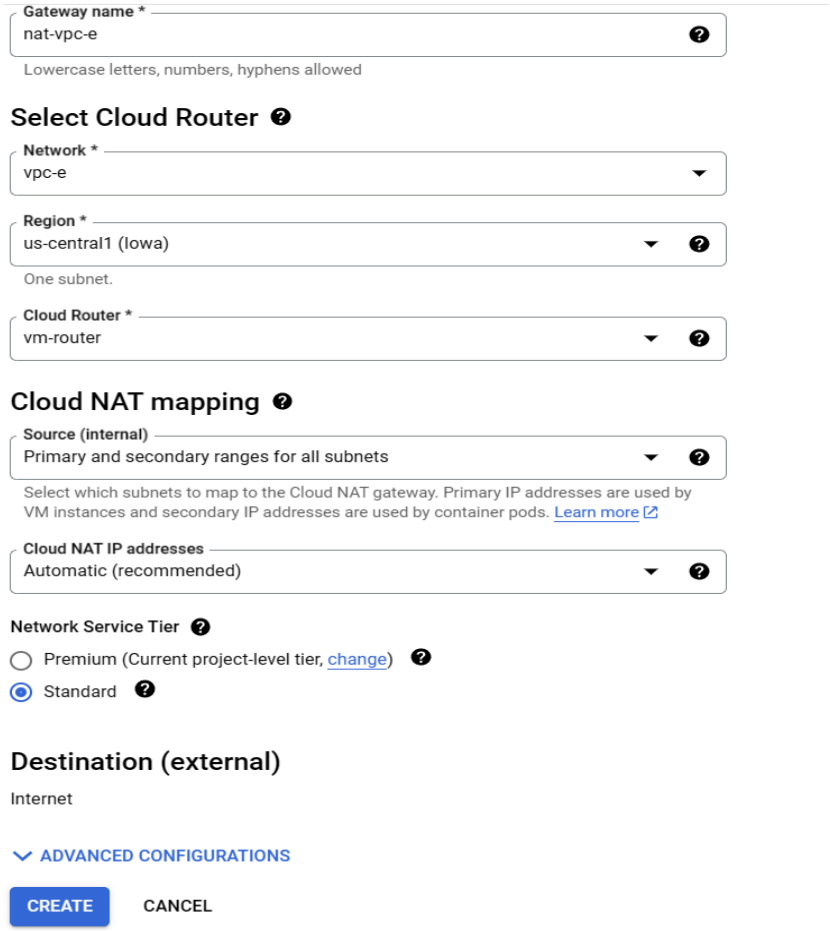
VM would look like this.



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



Now setup the Cloud nat →



Name- provide a name to Gateway

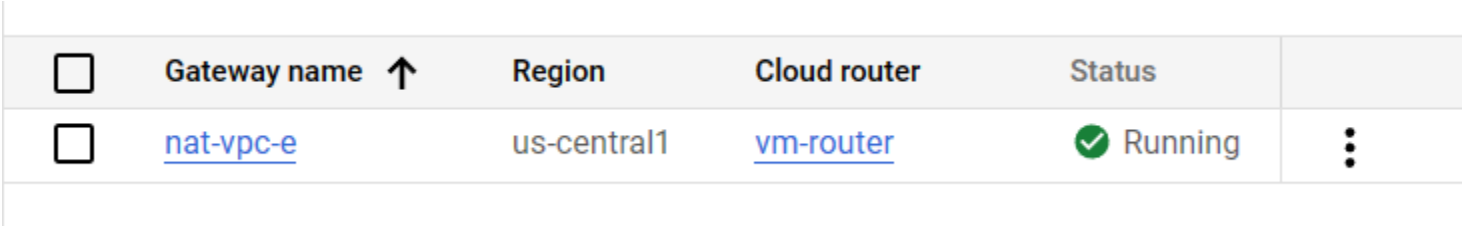
Network-select vpc-e & region

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



Gateway name	Region	Cloud router	Status
nat-vpc-e	us-central1	vm-router	Running

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
```