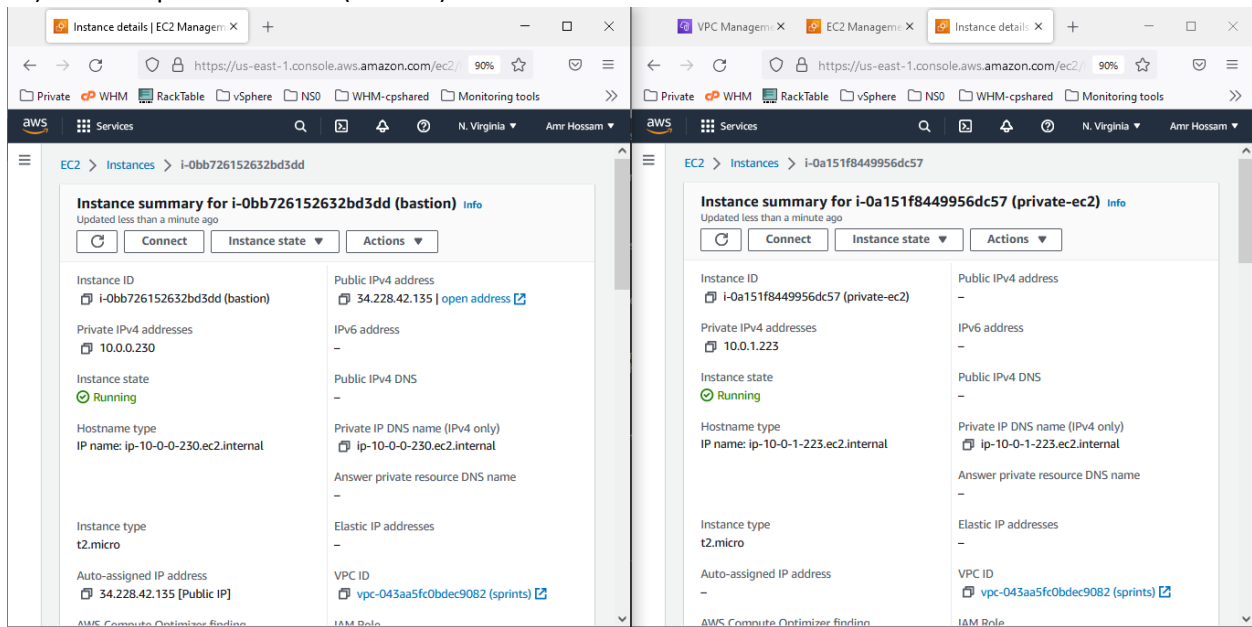


Lab (4)

1- Launch a jump host Take a screenshot while you are ssh to the jumphost Also When you ssh from bastion to the private machine Screenshot from the console showing the instances Ips

Solution:

a) Create a public instance (bastion) and Private ec2



b) Secure copy for the key to the public ec2

```
PS C:\Users\amr.m.hussien\Downloads> scp -i .\my-key.pem ubuntu@34.228.42.135:/home/ubuntu/my-key.pem .\my-key.pem
my-key.pem
100% 1675 11.8KB/s 00:00
PS C:\Users\amr.m.hussien\Downloads> ssh -i .\my-key.pem ubuntu@34.228.42.135
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Thu Jun  8 20:33:06 UTC 2023

System load:  0.0          Processes:      97
Usage of /:   20.8% of 7.57GB Users logged in:  0
Memory usage: 25%         IPv4 address for eth0: 10.0.0.230
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Thu Jun  8 20:21:29 2023 from 156.205.241.177
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-10-0-0-230:~$ ls
my-key.pem
```

c) Now you Can access the private ec2 with jumphost

```
ubuntu@ip-10-0-1-223: ~
ubuntu@ip-10-0-0-230:~$ ls
my-key.pem
ubuntu@ip-10-0-0-230:~$ ssh -i "my-key.pem" ubuntu@10.0.1.223
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.19.0-1025-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Thu Jun  8 20:35:57 UTC 2023

System load:  0.0          Processes:      96
Usage of /:   20.8% of 7.57GB Users logged in:  0
Memory usage: 24%         IPv4 address for eth0: 10.0.1.223
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

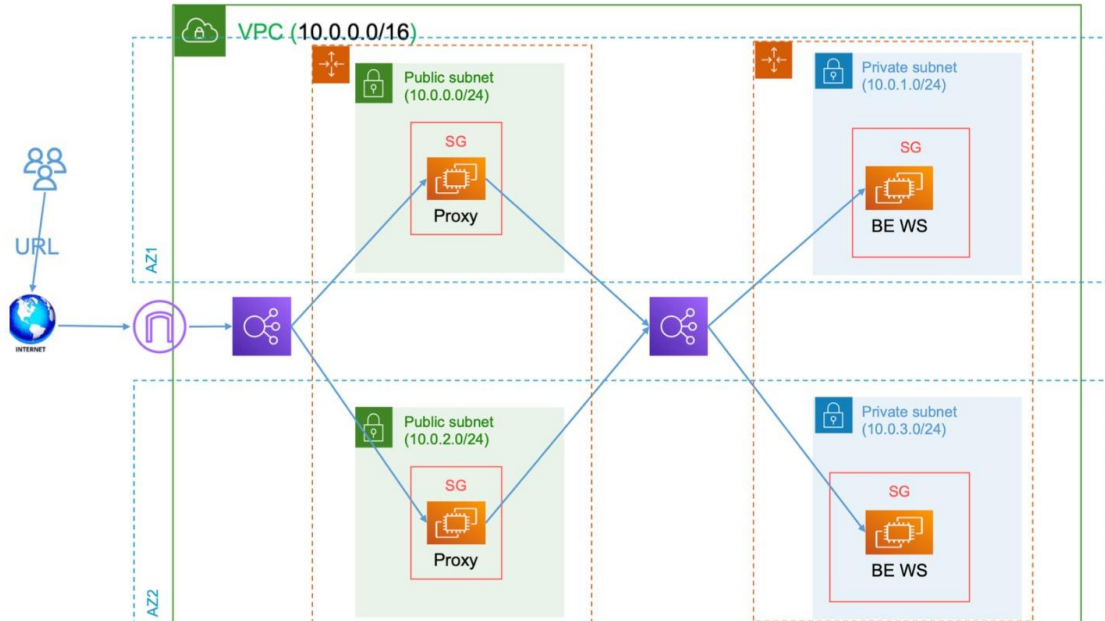
Last login: Thu Jun  8 19:41:23 2023 from 10.0.0.230
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-10-0-1-223:~$
```

2- Question 2:

Question1:

Implement a vpc with cidr 10.0.0.0/16 with 2 public subnets with cidrs 10.0.0.0/24 and 10.0.0.2.0/24 with a load balancer to Distribute the traffic between 2 machines with nginx installed in them as a proxy and 2 private subnets with the below cidrs 10.0.1.0/24 and 10.0.0.3.0/24 then a 2 instances attached in autoscaling in the private subnets with apache installed without SSH and load balancer to install between them



Needed :

A screenshot from the autoscaling group after indicating the minimum ,maximum and desired instances

Screenshot from the 2 target groups indicating the machines are healthy

Screenshot indicate the the machines BE WS are private

Screenshot from the public load balancer when you hit a request from it from a browser with a response returned from the instances

Solution:

Auto Scaling Group:

The screenshot shows the AWS Management Console for the 'Auto Scaling groups' page. The left sidebar contains navigation links for various AWS services. The main content area displays the 'Auto Scaling groups (1/1)' section, with a table listing the 'apache-asg' group. Below this, the 'Auto Scaling group: apache-asg' details are shown, including a table of instances.

Name	Launch template/configuration	Instances	Status	Desired capacity	Min
apache-asg	apache-server Version Default	2	-	2	2

Instance ID	Lifecycle	Instanc...	Weight...	Launch ...	Availab...	Health ...	Protect...
i-069b525fbac52c49c	InService	t2.micro	-	apache-server	us-east-1a	Healthy	
i-096ba7db6b4273a81	InService	t2.micro	-	apache-server	us-east-1b	Healthy	

Target Groups with Healthy check:

The screenshot shows the AWS Management Console for the 'Target groups' page. The left sidebar contains navigation links for various AWS services. The main content area displays the 'Target groups (1/2)' section, with a table listing the 'nginx-tg' group. Below this, the 'Target group: nginx-tg' details are shown, including a table of registered targets.

Name	ARN	Port	Protocol	Target type	Load balancer
apache-tg	arn:aws:elasticloadbalanci...	80	HTTP	Instance	apache-lb
nginx-tg	arn:aws:elasticloadbalanci...	80	HTTP	Instance	nginx-lb

Instanc...	Name	Port	Zone	Health ...	Health status details
i-0c2fad2...	nginx-2	80	us-east-1b	healthy	
i-0c9085e...	nginx-1	80	us-east-1a	healthy	

Target groups | EC2 Management Console

nginx-lb-1250323586.us-east-1.elb.amazonaws.com

502 Bad Gateway

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroups:

Private WHM RackTable vSphere NS0 WHM-cpshared Monitoring tools Tools-SMS-Service Desk SmarterMail Dedicated SmarterMail Shared Load balancers | EC2 ...

Services Search [Alt+S]

N. Virginia Amr Hossam

EC2 > Target groups

Target groups (1/2) Info

Find resources by attribute or tag

	Name	ARN	Port	Protocol	Target type	Load balancer
<input checked="" type="checkbox"/>	apache-tg	arn:aws:elasticloadbalancing:us-east-1:125467979341:targetgroup/apache-tg/125467979341	80	HTTP	Instance	apache-lb
<input type="checkbox"/>	nginx-tg	arn:aws:elasticloadbalancing:us-east-1:125467979341:targetgroup/nginx-tg/125467979341	80	HTTP	Instance	nginx-lb

Target group: apache-tg

Registered targets (2)

Filter resources by property or value

	Instance ID	Name	Port	Zone	Health status	Health status details
<input type="checkbox"/>	i-069b525fbac52c...		80	us-east-1a	healthy	
<input type="checkbox"/>	i-096ba7db6b4273...		80	us-east-1b	healthy	

CloudShell Feedback Language

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Load Balancer:

Load balancers | EC2 Management Console

502 Bad Gateway

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers:v=3

Private WHM RackTable vSphere NS0 WHM-cpshared Monitoring tools Tools-SMS-Service Desk SmarterMail Dedicated SmarterMail Shared Load balancers | EC2 ...

Services Search [Alt+S]

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EC2 > Load balancers

Load balancers (1/2)

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Find resources by attribute or tag

	Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
<input checked="" type="checkbox"/>	nginx-lb	nginx-lb-1250323586.us-east-1.elb.amazonaws.com	Active	vpc-043aa5fc0bdec9082	2 Availability Zones	application	June 8, 2023, 21:20 (UTC+03:00)
<input type="checkbox"/>	apache-lb	apache-lb-981363926.us-east-1.elb.amazonaws.com	Active	vpc-043aa5fc0bdec9082	2 Availability Zones	application	June 8, 2023, 20:31 (UTC+03:00)

Load balancer: nginx-lb

Load balancer ARN

arn:aws:elasticloadbalancing:us-east-1:125467979341:loadbalancer/app/nginx-lb/de1bf11b398d5a8

DNS name

nginx-lb-1250323586.us-east-1.elb.amazonaws.com (A Record)

CloudShell Feedback Language

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Indicates Machines Be AWS are Private

Public load balancer when you hit a request from a browser with returned response

The output contains the private ips in the body of web

The screenshot displays a web browser window on the left and the AWS Management Console on the right. The browser shows two requests to the endpoint `nginx-lb-1250323586.us-east-1.elb.amazonaws.com`. The first request returns the response **Hello from 10.0.3.233 instance**, and the second returns **Hello from 10.0.1.206 instance**. The AWS console on the right shows the 'User data' section of an EC2 instance, containing a script that generates these responses based on the instance's private IP address.

```
#!/bin/bash
sudo apt update
sudo apt install apache2 -y
sudo systemctl enable apache2
sudo systemctl start apache2
sudo echo "<h1>Hello from $(ip addr show eth0 | grep -Po 'inet \K[.\\d.]+'); instance</h1>" > /var/www/html/index.html
```

Base64-encoded user data has been decoded for readability.