

Lab 3

Lab3

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

1) Create vpc, Private subnet, public, subnet ,two route table and internet GW

VPC > Your VPCs > vpc-0b9d3d12d8e9ed169

vpc-0b9d3d12d8e9ed169 / lab_3_VPC

Actions

Details Info

VPC ID vpc-0b9d3d12d8e9ed169	State Available	DNS hostnames Disabled	DNS resolution Enabled
Tenancy Default	DHCP option set dopt-05683ce2b1cafd275	Main route table rtb-0e0658301876a005b	Main network ACL acl-041373c4b957e6f29
Default VPC No	IPv4 CIDR 10.0.0.0/24	IPv6 pool -	IPv6 CIDR (Network border group) -
Network Address Usage metrics Disabled	Route 53 Resolver DNS Firewall rule groups -	Owner ID 422097883691	

<input type="checkbox"/>	lab_3_private_subnet	subnet-056224b2031ba9df3	Available	vpc-0b9d3d12d8e9ed169 la...	10.0.0.0/28
<input type="checkbox"/>	-	subnet-0389e947a137e5844	Available	vpc-0b92a5634ea5f6681	172.31.64.0/20
<input type="checkbox"/>	-	subnet-017a96ebe738057c1	Available	vpc-0b92a5634ea5f6681	172.31.48.0/20
<input type="checkbox"/>	-	subnet-0bfb20b31494eb28c	Available	vpc-0b92a5634ea5f6681	172.31.32.0/20
<input type="checkbox"/>	-	subnet-00a9893f561206386	Available	vpc-0b92a5634ea5f6681	172.31.16.0/20
<input type="checkbox"/>	-	subnet-004e015fe541826e5	Available	vpc-0b92a5634ea5f6681	172.31.0.0/20
<input type="checkbox"/>	-	subnet-07c360f9f96452860	Available	vpc-0b92a5634ea5f6681	172.31.80.0/20
<input type="checkbox"/>	lab_3_puplic_subnet	subnet-0e0496ba4ef77116d	Available	vpc-0b9d3d12d8e9ed169 la...	10.0.0.16/28

<input type="checkbox"/>	Name	Internet gateway ID	State	VPC ID	Owner
<input type="checkbox"/>	Lab_3_GW	igw-02c820d3b0f60dcb4	Attached	vpc-0b9d3d12d8e9ed169 lab_3_VPC	4220978836
<input type="checkbox"/>	-	igw-0547a15c8f579d2e7	Attached	vpc-0b92a5634ea5f6681	4220978836

2)create jumb-host instance in public subnet and allow ssh connection only using security group

Instance summary for i-0517766b7dfd6057b (jumb_host) Info

Updated less than a minute ago

Connect Instance state Actions

Instance ID i-0517766b7dfd6057b (jumb_host)	Public IPv4 address 54.145.200.215 open address	Private IPv4 addresses 10.0.0.27
IPv6 address -	Instance state Running	Public IPv4 DNS -
Hostname type IP name: ip-10-0-0-27.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-0-27.ec2.internal	Elastic IP addresses -
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address 54.145.200.215 [Public IP]	VPC ID vpc-0b9d3d12d8e9ed169 (lab_3_VPC)	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-0e0496ba4ef77116d (lab_3_puplic_subnet)	

Details Security Networking Storage Status checks Monitoring Tags

▼ Security details

IAM Role -	Owner ID 422097883691	Launch time Mon Dec 26 2022 14:33:00 GMT+0200 (Eastern European Standard Time)
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Security groups
sg-03a78984b704840df (ssh_connection)

▼ Inbound rules

Filter rules

Name	Security group rule ID	Port range	Protocol	Source
	sg-0265339a3259e2f54	22	TCP	0.0.0.0/0

3)create private instance in the private subnet and allow only ssh from jumb_host 's security group

Instance summary for i-0747a5d4bf9caa46c (private_server) [Info](#)

Updated less than a minute ago

[Refresh](#) [Connect](#) [Instance state](#) [Actions](#)

Instance ID i-0747a5d4bf9caa46c (private_server)	Public IPv4 address -	Private IPv4 addresses 10.0.0.13
IPv6 address -	Instance state Running	Public IPv4 DNS -
Hostname type IP name: ip-10-0-0-13.ec2.internal	Private IP DNS name (IPv4 only) ip-10-0-0-13.ec2.internal	Elastic IP addresses -
Answer private resource DNS name IPv4 (A)	Instance type t2.micro	AWS Compute Optimizer finding Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto-assigned IP address -	VPC ID vpc-0b9d3d12d8e9ed169 (lab_3_VPC)	Auto Scaling Group name -
IAM Role -	Subnet ID subnet-056224b2031ba9df3 (lab_3_private_subnet)	

IAM Role
-

Subnet ID
subnet-056224b2031ba9df3 (lab_3_private_subnet)

Auto Scaling Group name
-

Details

Security

Networking

Storage

Status checks

Monitoring

Tags

▼ Security details

IAM Role
-

Owner ID
422097883691

Launch time
Mon Dec 26 2022 14:43:24 GMT+0200 (Eastern European Standard Time)

Security groups
sg-02ea1fa9953ec7522 (ssh from bastion)

▼ Inbound rules

Filter rules

Security group rule ID	Port range	Protocol	Source	Security groups
sg-r0fe4b854c84eb32ec	22	TCP	sg-03a78984b704840df	ssh from bastion

4)ssh to jumb_host , copy pem file and from jumb_host ssh on private instance:

```
Islam@DESKTOP-G8INB1G MINGW64 /d/safa/Devops Sprints/labs
$ ssh -i "EC2.pem" ubuntu@54.145.200.215
The authenticity of host '54.145.200.215 (54.145.200.215)' can't be established.
ED25519 key fingerprint is SHA256:HzeEJ61G0j9PTXhhi7odsZnsFSDYwI8gVCdoAl25fpm.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.145.200.215' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1026-aws x86_64)

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

System information as of Mon Dec 26 12:40:12 UTC 2022

System load:  0.0          Processes:    97
Usage of /:   19.8% of 7.57GB Users logged in: 0
Memory usage: 21%         IPv4 address for eth0: 10.0.0.27
Swap usage:   0%

0 updates can be applied immediately.

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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

```
ubuntu@ip-10-0-0-27:~$ exit
logout
Connection to 54.145.200.215 closed.

Islam@DESKTOP-G8INB1G MINGW64 /d/safa/Devops Sprints/labs
$ scp -i EC2.pem EC2.pem ubuntu@54.145.200.215:/home/ubuntu/
EC2.pem

Islam@DESKTOP-G8INB1G MINGW64 /d/safa/Devops Sprints/labs
$ ssh -i "EC2.pem" ubuntu@54.145.200.215
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1026-aws x86_64)
```

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

System information as of Mon Dec 26 12:50:59 UTC 2022

System load:	0.0	Processes:	98
Usage of /:	20.0% of 7.57GB	Users logged in:	0
Memory usage:	22%	IPv4 address for eth0:	10.0.0.27
Swap usage:	0%		

0 updates can be applied immediately.

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

Last login: Mon Dec 26 12:40:13 2022 from 105.40.50.251
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

```
ubuntu@ip-10-0-0-27:~$ ls
EC2.pem
```

```
ubuntu@ip-10-0-0-27:~$ ssh -i EC2.pem ubuntu@10.0.0.13
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1026-aws x86_64)
```

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

System information as of Mon Dec 26 12:53:43 UTC 2022

System load:	0.0	Processes:	97
Usage of /:	19.7% of 7.57GB	Users logged in:	0
Memory usage:	20%	IPv4 address for eth0:	10.0.0.13
Swap usage:	0%		

0 updates can be applied immediately.

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

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

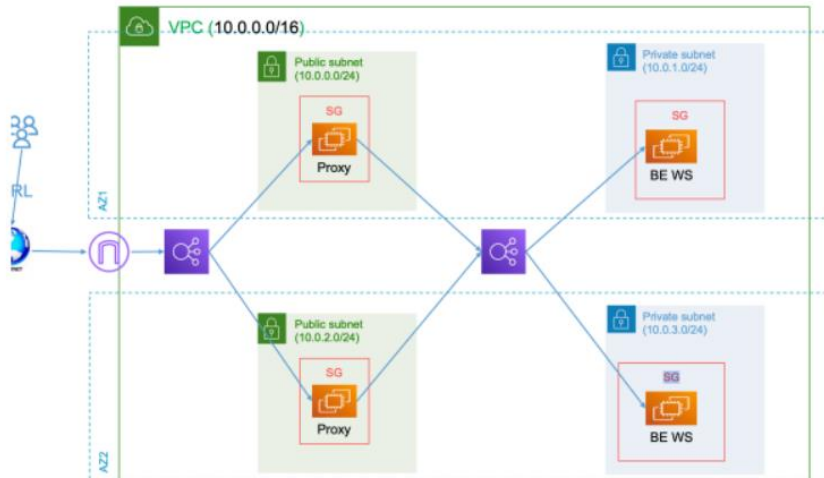
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

```
ubuntu@ip-10-0-0-13:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils bzip2 libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap liblua5.3-0 mailcap
```

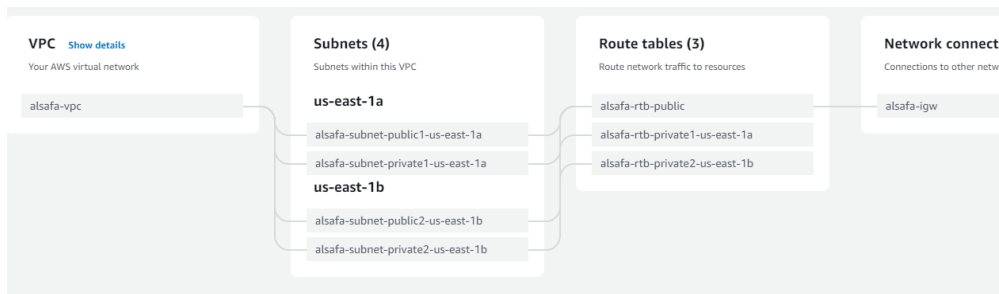
2-

Implement the below diagram then take a screenshot while you put dns of the load balancer into the browser and it returns a response from the 2 apache instances
Also Screenshot from the console showing the machines BE WS have private Ips
And finally a screenshot showing the targets of the 2 loadbalancers target groups are healthy



Part 2

1) create vpc, subnets, and then create nat and attach it to the two private route table:



2)create two nginx instance in public subnets and two apachi in private subnet then check the nginx and apachi servers:

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input type="checkbox"/>	nginx_2	i-0c75cf44a2d8e75cb	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b
<input type="checkbox"/>	apachi_2	i-096493d904a0ba38e	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b
<input type="checkbox"/>	nginx_1	i-0d6101a1329b14e7e	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a
<input type="checkbox"/>	Apachi_1	i-031ac955f1cdd6ac8	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a

EC2 > ... > i-0c75cf44a2d8e75cb

Instance summary for i-0c75cf44a2d8e75cb (nginx_2)

Updated less than a minute ago

[Connect](#) [Instance state](#) [Actions](#)

Instance ID: i-0c75cf44a2d8e75cb (nginx_2)

Public IPv4 address: 52.23.240.249 | [open address](#)

Private IPv4 addresses: 10.0.2.6

Instance state: Running

Hostname type: IP name: ip-10-0-2-6.ec2.internal

Answer private resource DNS name: ip-10-0-2-6.ec2.internal

EC2 > ... > i-0d6101a1329b14e7e

Instance summary for i-0d6101a1329b14e7e (nginx_1)

Updated less than a minute ago

[Connect](#) [Instance state](#) [Actions](#)

Instance ID: i-0d6101a1329b14e7e (nginx_1)

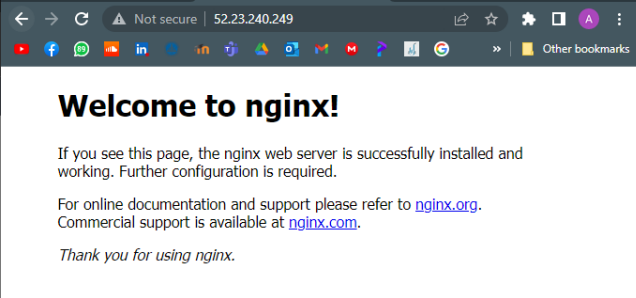
Public IPv4 address: 54.158.197.181 | [open address](#)

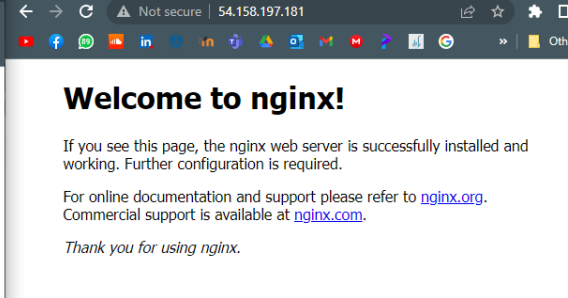
Private IPv4 addresses: 10.0.0.53

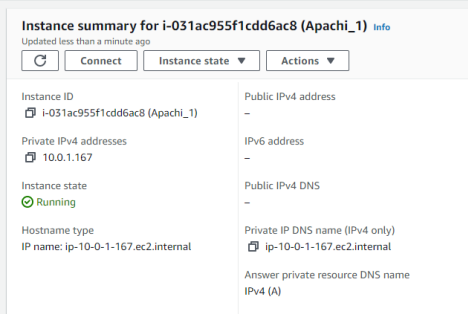
Instance state: Running

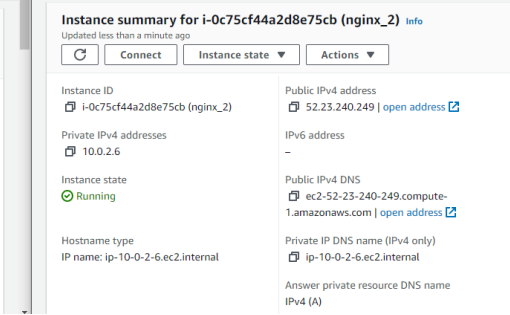
Hostname type: IP name: ip-10-0-0-53.ec2.internal

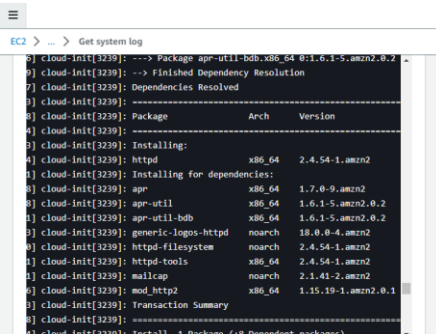
Answer private resource DNS name: ip-10-0-0-53.ec2.internal

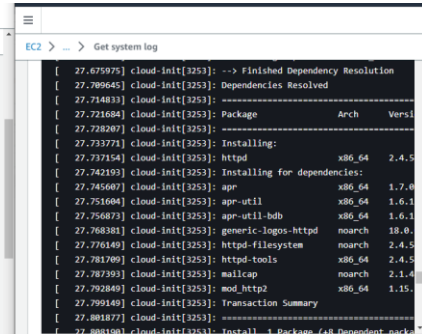












3)create two target group:

Target groups (2) Info					
<div> <input type="text" value="Search or filter target groups"/> </div>					
<input type="checkbox"/>	Name	ARN	Port	Protocol	Target type
<input type="checkbox"/>	target-group-1-nginx	arn:aws:elasticloadbalancing:us-east-1:123456789012:targetgroup/target-group-1-nginx/12345678901234567890123456789012	80	HTTP	Instance
<input type="checkbox"/>	target-group-2-apachi	arn:aws:elasticloadbalancing:us-east-1:123456789012:targetgroup/target-group-2-apachi/12345678901234567890123456789012	80	TCP	Instance

4)create application load balancer and net:

Load balancers (2)					
Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.					
<div> <input type="text" value="Filter by property or value"/> </div>					
<input type="checkbox"/>	Name	DNS name	State	VPC ID	Availability Zones
<input type="checkbox"/>	net-LB	net-LB-8eaa3b45d27e9d2b.elb.us-east-1.amazonaws.com	Active	vpc-061c118664d1ce6c6	2 Availability Zones
<input type="checkbox"/>	App-LB	App-LB-2064836756.us-east-1.elb.amazonaws.com	Active	vpc-061c118664d1ce6c6	2 Availability Zones

5) configure each nginx servers:

```
cd /etc/nginx/sites-available/  
sudo vim reverse-apache.conf  
server {  
    listen 80;  
    location / {  
        proxy_pass http://net-LB-8eaa3b45d27e9d2b.elb.us-east-1.amazonaws.com;  
    }  
}  
  
sudo cp reverse-apache.conf /etc/nginx/conf.d/lb.conf  
sudo ln -s /etc/nginx/sites-available/reverse-apache.conf /etc/nginx/sites-enabled/reverse-apache.conf  
sudo rm /etc/nginx/sites-enabled/default  
sudo ufw allow http/tcp  
sudo ufw enable  
sudo systemctl restart nginx
```

6)check healthy and load balancer

The screenshot displays two target groups in the AWS Management Console. The first target group, 'net-LB', is associated with VPC 'vpc-061c118664d1ce6c6' and has two targets: 'Apachi_2' (Instance ID: i-028d49e292ea55b5f) and 'Apachi_1' (Instance ID: i-0a7ba7f6c6185bf0), both of which are healthy. The second target group, 'App-LB', is also associated with the same VPC and has two targets: 'nginx_2' (Instance ID: i-02b44be14a3d790c9) and 'nginx_1' (Instance ID: i-01ca0ae4ae655c1f2), both of which are healthy. The console shows the 'Targets' tab for each target group, with columns for Instance ID, Name, Port, Zone, Health status, and Health status details.

