

## Module 9 Guided Lab - Creating a Highly Available Environment

### Lab-08

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Lab session: Friday 4:30-6:30

#### Task 1 :: Inspecting your VPC

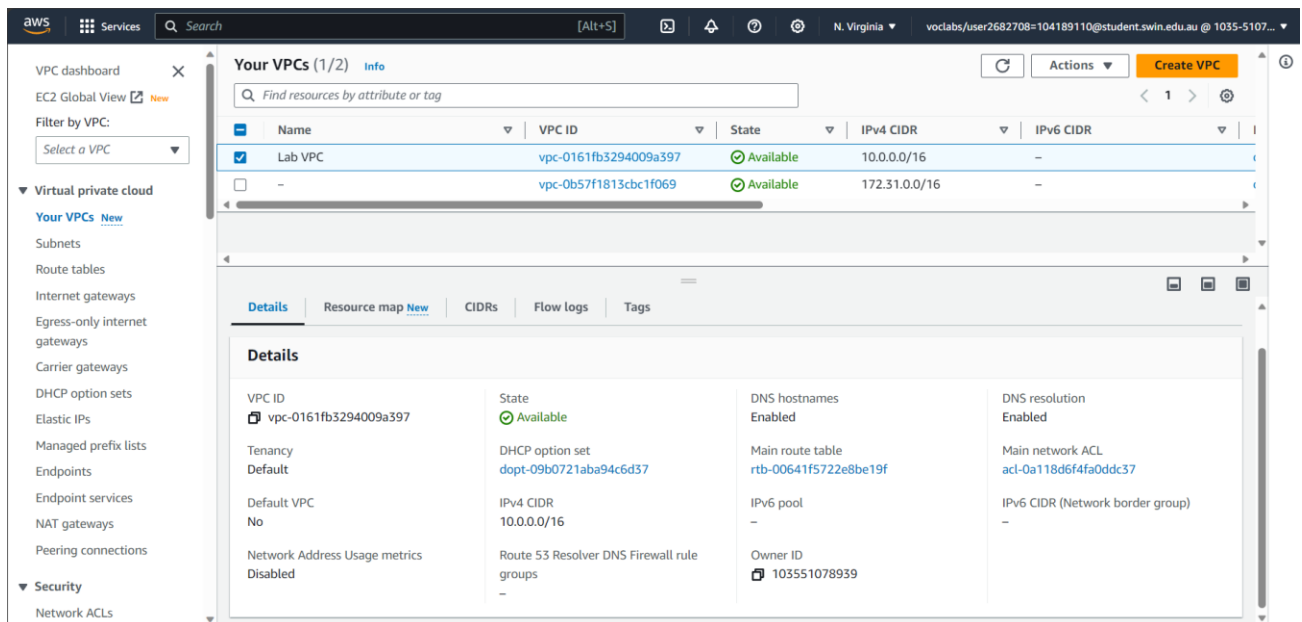


Fig 1.1

## The internet gateway lab IG attached to Lab VPC

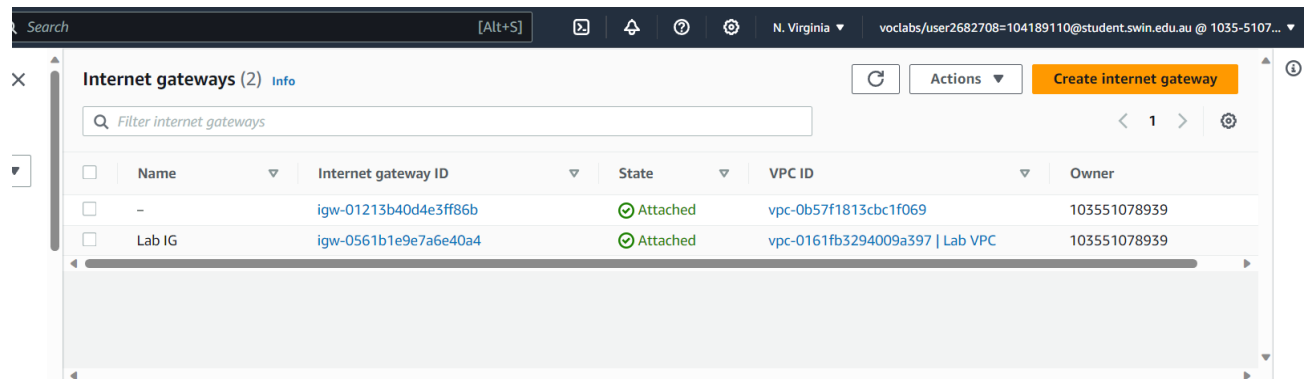
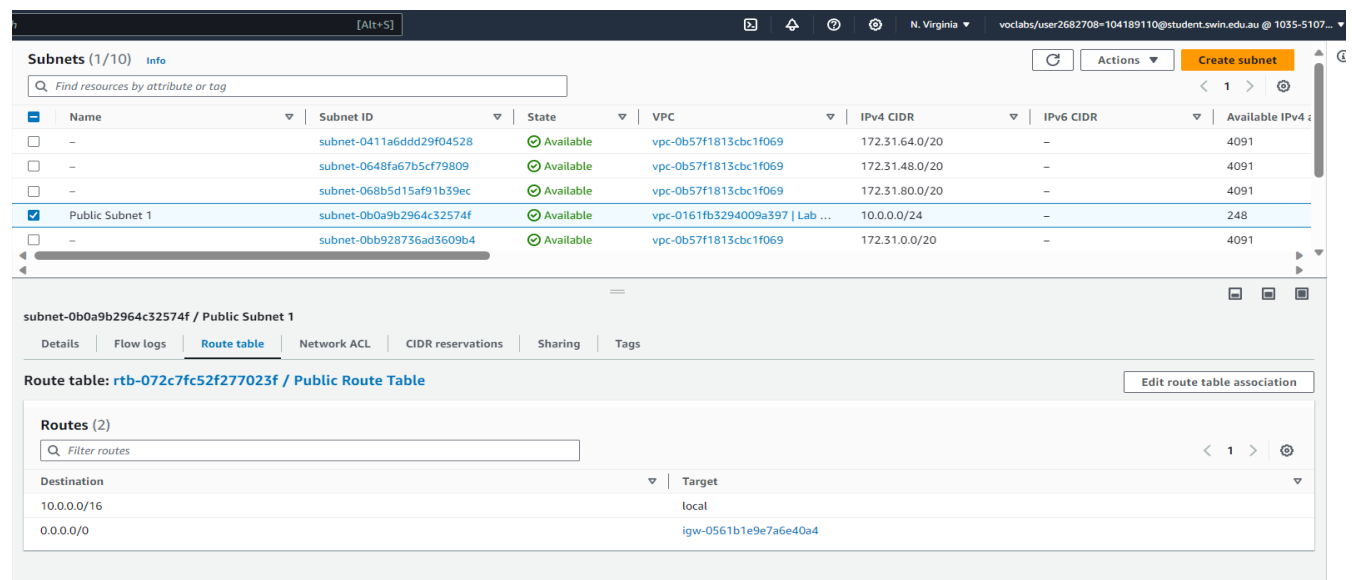


Fig 1.2

## Public subnet 1



## Task 2 Creating an application load balancer

## Load Balancer created as per configuration

**Load balancers (1/1)**

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

Filter by property or value

Name	DNS name	State	VPC ID	Availability Zones	Type	Date created
Inventory-LB	Inventory-LB-69314531.us...	Active	vpc-0161fb3294009a397	2 Availability Zones	application	October 3, 2023, 10:33 (UTC+11:00)

**Load balancer: Inventory-LB**

Details | Listeners and rules | Network mapping | Security | Monitoring | Integrations | Attributes | Tags

**Details**

Load balancer type Application	Status Active	VPC vpc-0161fb3294009a397	IP address type IPv4
Scheme Internet-facing	Hosted zone Z35XDOTRQ7X7K	Availability Zones subnet-0b0a9b2964c32574f us-east-1a (use1-az2) subnet-096ea80b2f652c2f9 us-east-1b (use1-az4)	Date created October 3, 2023, 10:33 (UTC+11:00)
Load balancer ARN arn:aws:elasticloadbalancing:us-east-1:103551078939:loadbalancer/app/Inventory-LB/a511db313a80a610		DNS name Inventory-LB-69314531.us-east-1.elb.amazonaws.com (A Record)	

Fig 2.1

## Checking the load balancer

**Listeners and rules (1)**

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

Filter listeners by property or value

Protocol/Port	Default action	Rules	ARN	Security policy	Default SSL/TLS certificate	Tags
HTTP:80	Forward to target group • Inventory-App: 1 (100%) • Group-level stickiness: Off	1 rule	ARN	Not applicable	Not applicable	0 tags

Fig 2.2

EC2 > Load balancers

Load balancers (1/1)

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

Filter by property or value

Name

DNS name

State

VPC ID

Availability Zones

Type

Date created

Inventory-LB

Inventory-LB-69314531.us...

Active

vpc-0161fb3294009a397

2 Availability Zones

application

October 3, 2023, 10:33 (UTC+11:00)

Load balancer: Inventory-LB

DetailsListeners and rulesNetwork mappingSecurityMonitoringIntegrationsAttributesTags

Network mapping

Info

Targets in the listed zones and subnets are available for traffic from the load balancer using the IP addresses shown.

Edit IP address type

Edit subnets

VPC

vpc-0161fb3294009a397

IPv4: 10.0.0.0/16

IPv6: -

IP address type

IPv4

Mappings

Including two or more Availability Zones, and corresponding subnets, increases the fault tolerance of your applications.

Zone

Subnet

IPv4 address

Private IPv4 address

IPv6 address

us-east-1a (use1-a22)

subnet-0b0a9b2964c32574f

Assigned by AWS

Assigned from CIDR 10.0.0.0/24

Not applicable

us-east-1b (use1-a24)

subnet-096ea80b2f652c2fd

Assigned by AWS

Assigned from CIDR 10.0.1.0/24

Not applicable

Fig 2.3

ch

EC2 > Load balancers

Load balancers (1/1)

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

Filter by property or value

Name

DNS name

State

VPC ID

Availability Zones

Type

Date created

Inventory-LB

Inventory-LB-69314531.us...

Active

vpc-0161fb3294009a397

2 Availability Zones

application

October 3, 2023, 10:33 (UTC+11:00)

Load balancer: Inventory-LB

DetailsListeners and rulesNetwork mappingSecurityMonitoringIntegrationsAttributesTags

Security groups (1)

A security group is a set of firewall rules that control the traffic to your load balancer.

Edit

Security Group ID

Name

Description

sg-020cd2b425525398f

Inventory-LB

Enable web access to load balancer

Fig2.4

Security group

[Alt+S]

N. Virginia

voclabs/user2682708-104189110@student.swin.edu.au @ 1035-5107...

EC2 > Security Groups > sg-020cd2b425525398f - Inventory-LB

sg-020cd2b425525398f - Inventory-LB

Actions

Details

Security group name

Inventory-LB

Security group ID

sg-020cd2b425525398f

Description

Enable web access to load balancer

VPC ID

vpc-0161fb3294009a397

Owner

103551078939

Inbound rules count

2 Permission entries

Outbound rules count

1 Permission entry

Inbound rules

Outbound rules

Tags

Inbound rules (2)

Filter security group rules

Manage tags

Edit inbound rules

< 1 >

	Name	Security group rule...	IP version	Type	Protocol	Port range	Source	Description
<input type="checkbox"/>	-	sgr-07cfd088fb267755b	IPv4	HTTPS	TCP	443	0.0.0.0/0	-
<input type="checkbox"/>	-	sgr-04d8d3f2e7aa67d28	IPv4	HTTP	TCP	80	0.0.0.0/0	-

Fig2.5

Target groups created

[Alt+S]

N. Virginia

voclabs/user2682708-104189110@student.swin.edu.au @ 1035-5107...

EC2 > Target groups

Target groups (1/1) Info

Actions

Create target group

Filter target groups

< 1 >

	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input checked="" type="checkbox"/>	Inventory-App	arn:aws:elasticloadbalanci...	80	HTTP	Instance	Inventory-LB	vpc-0161fb3294009a397

Target group: Inventory-App

Details

Targets

Monitoring

Health checks

Attributes

Tags

Registered targets (2)

Filter resources by property or value

Deregister

Register targets

< 1 >

	Instance ID	Name	Port	Zone	Health status	Health status details
<input type="checkbox"/>	i-0931b4777963b5954	Inventory-App	80	us-east-1a	healthy	
<input type="checkbox"/>	i-06ac8c19e3ab8a955	Inventory-App	80	us-east-1b	healthy	

Fig 2.6

EC2 > Target groups

Target groups (1/1) [Info](#)

[Refresh](#) [Actions](#) [Create target group](#)

< 1 > [Settings](#)

<input checked="" type="checkbox"/>	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input checked="" type="checkbox"/>	Inventory-App	arn:aws:elasticloadbalancing:us-east-1:103551078959:targetgroup/Inventory-App/2763dfa0c58b2749	80	HTTP	Instance	Inventory-LB	vpc-0161fb3294009a397

Target group: Inventory-App

[Details](#) [Targets](#) [Monitoring](#) [Health checks](#) [Attributes](#) [Tags](#)

**Details**

[arn:aws:elasticloadbalancing:us-east-1:103551078959:targetgroup/Inventory-App/2763dfa0c58b2749](#)

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC <a href="#">vpc-0161fb3294009a397</a>
IP address type IPv4	Load balancer <a href="#">Inventory-LB</a>		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
2	<span style="color: green;">✔</span> 2	<span style="color: red;">✘</span> 0	<span style="color: gray;">⊖</span> 0	<span style="color: gray;">⌚</span> 0	<span style="color: gray;">⌚</span> 0

► **Distribution of targets by Availability Zone (AZ)**

Select values in this table to see corresponding filters applied to the Registered targets table below.

Fig 2.7

EC2 > Target groups

Target groups (1/1) [Info](#)

[Refresh](#) [Actions](#) [Create target group](#)

< 1 > [Settings](#)

<input checked="" type="checkbox"/>	Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
<input checked="" type="checkbox"/>	Inventory-App	arn:aws:elasticloadbalancing:us-east-1:103551078959:targetgroup/Inventory-App/2763dfa0c58b2749	80	HTTP	Instance	Inventory-LB	vpc-0161fb3294009a397

Target group: Inventory-App

[Details](#) [Targets](#) [Monitoring](#) [Health checks](#) [Attributes](#) [Tags](#)

**Health check settings** [Edit](#)

Protocol HTTP	Path /	Port Traffic port	Healthy threshold 2 consecutive health check successes
Unhealthy threshold 2 consecutive health check failures	Timeout 5 seconds	Interval 10 seconds	Success codes 200

Fig 2.8

Unhealthy because I Terminated instance one for testing

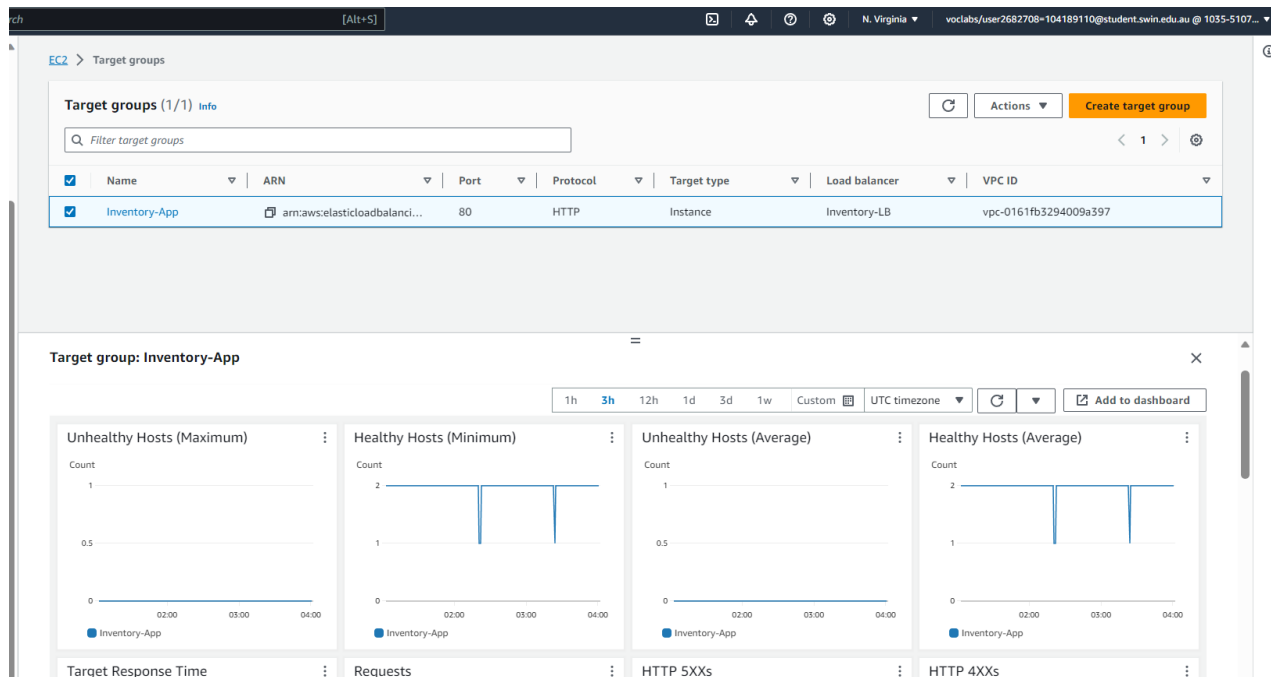


Fig2.9

### TASK 3 Creating an Auto Scaling Group

Created auto scaling groups for both private subnets to make ec2 instances access for both AZ

The screenshot shows the 'Choose instance launch options' step in the AWS Management Console. The left sidebar lists the steps: Step 1: Choose launch template, Step 2: Choose instance launch options (selected), Step 3 - optional: Configure advanced options, Step 4 - optional: Configure group size and scaling policies, Step 5 - optional: Add notifications, Step 6 - optional: Add tags, and Step 7: Review. The main content area is titled 'Choose instance launch options' and includes a 'Network' section. Under 'Network', there is a 'VPC' dropdown menu set to 'vpc-0161fb3294009a397 (Lab VPC)' and an 'Availability Zones and subnets' section. This section contains two subnets: 'us-east-1a | subnet-013c60ea80039302a (Private Subnet 1)' and 'us-east-1b | subnet-0ba716e64cb169f6f (Private Subnet 2)'. Both subnets are marked as 'Private' and have a '10.0.2.0/23' CIDR block.

Fig3.1

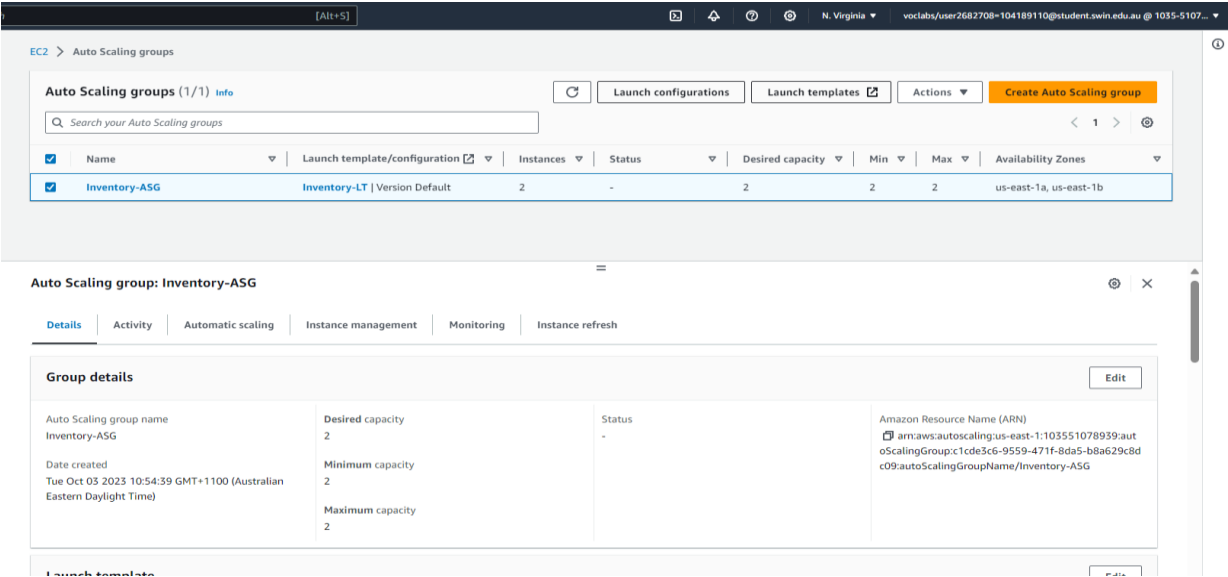


Fig3.2

Task 4 Updating security groups

Inbound rule of inventory dB security group

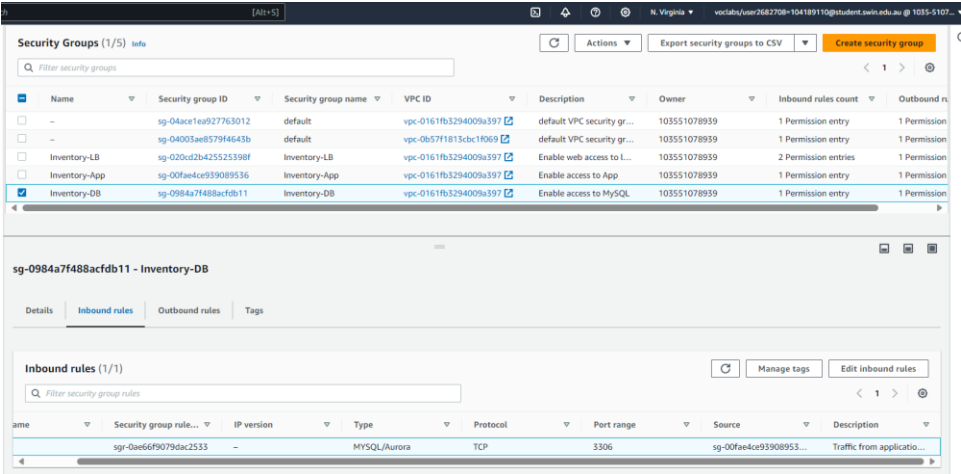


Fig4.1



Taks 5:: Testing the application

Healthy instance

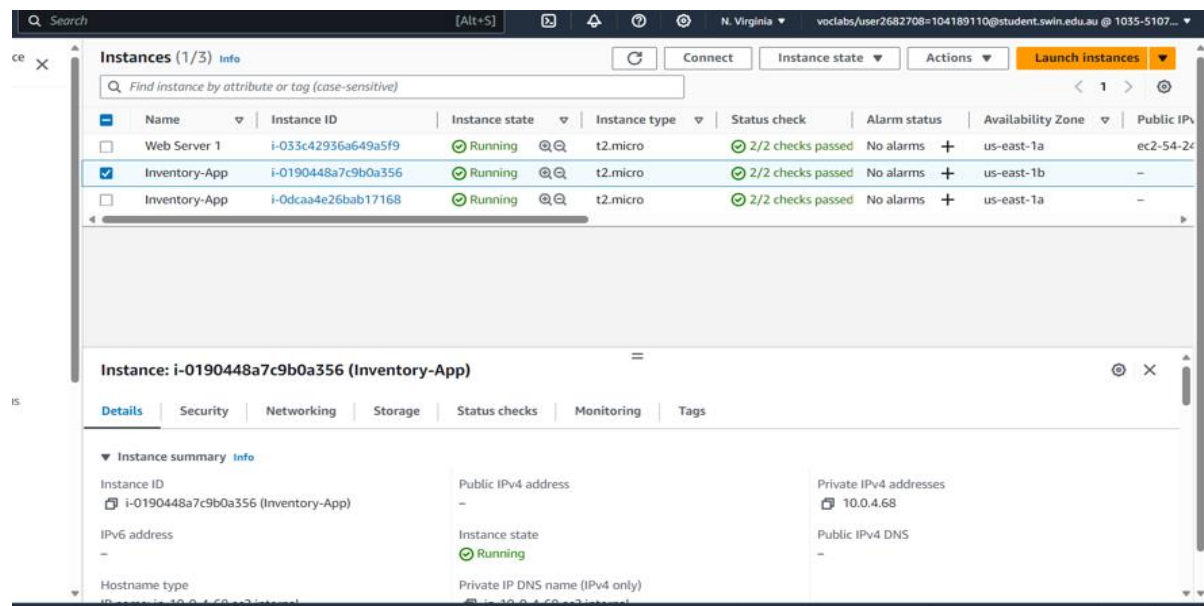


Fig5.1

Testing the instance ID toggles between 2 instances

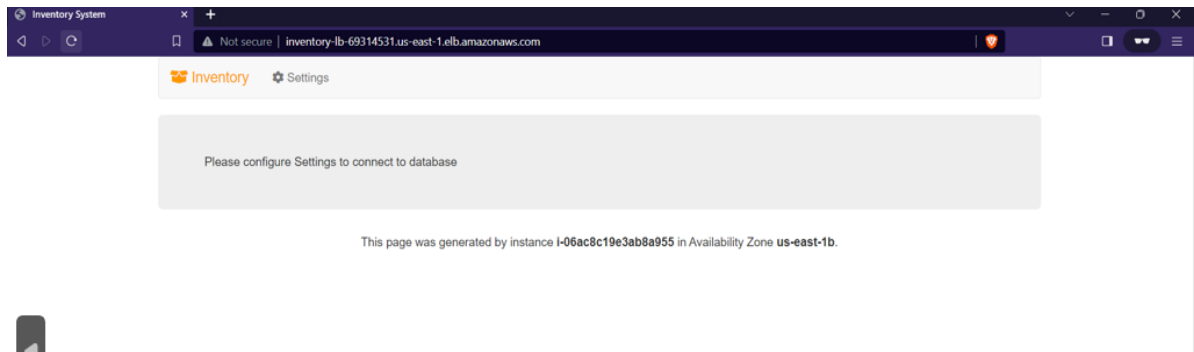


Fig5.2



Fig5.3

## Task 6 Testing High availability

Terminating the current instance so that a new one is launched

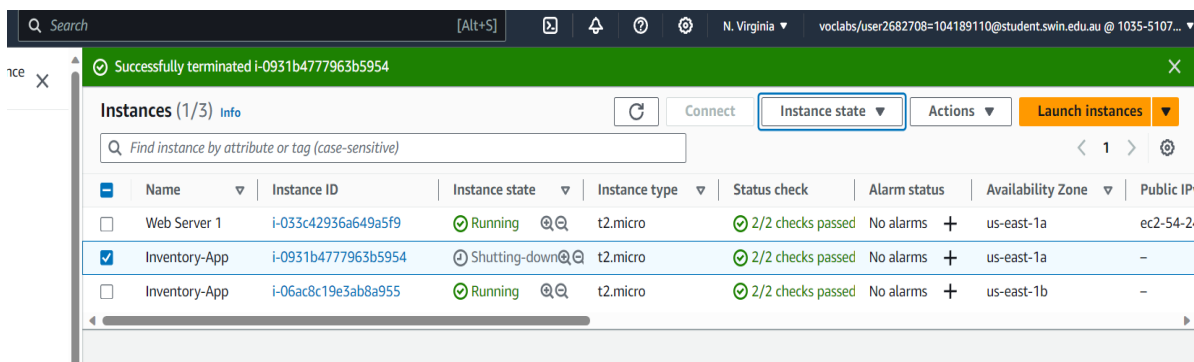


Fig6.1

New instance automatically launched

Instances (4) [info](#)

Find instance by attribute or tag (case-sensitive)

Connect Instance state Actions Launch instances

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input type="checkbox"/>	Web Server 1	i-033e42936a649a5f9	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-54-243-13-19.com...	54.243.13.19	-
<input type="checkbox"/>	Inventory-App	i-0931b4777963b5954	Terminated	t2.micro	-	No alarms	us-east-1a	-	-	-
<input type="checkbox"/>	Inventory-App	i-0fe1ed8f5ec217201	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	-	-	-
<input type="checkbox"/>	Inventory-App	i-06ac9c19e3ab8a955	Running	t2.micro	2/2 checks passed	No alarms	us-east-1b	-	-	-

Fig6.2



