Please use your free tier AWS account to complete this lab

Deploying a highly available web application using Auto scaling and Load balancing.

This lab is in the continuation of VPC lab and assumes you have retained the Public Subnets from previous lab. If not, then you can use your default VPC for this lab.

You will be launching an application using a Launch Configuration into an Auto Scaling Group, the ASG will automatically grow and shrink the number of your servers based on the user defined threshold. The requests to your application will be distributed by Application Load Balancer.

Go to the Auto Scaling section in your EC2 dashboard and click on Create Launch Configuration.

AMI - "Amazon Linux AMI" (Do not select Amazon Linux 2)
Instance Type – t2.micro
Name – MyAppServer_V01_LC
Expand Advance Details Section and paste below script in the user data box.

Please open this lab document in Adobe reader to retain the format of script.

```
#!/bin/sh
yum -y install httpd php
chkconfig httpd on
/etc/init.d/httpd start
cd /var/www/html
wget https://s3-us-west-2.amazonaws.com/us-west-2-aws-training/awsu-spl/spl-03/scripts/examplefiles-elb.zip
unzip examplefiles-elb.zip
```

Go next.
No additional storage, go next.
On the security group page, either create a new security group with ssh and http open or select an existing one from previous lab.
Click on Create launch configuration
Create a new key pair or select the existing mykp.pem and Create launch configuration
Your Launch Configuration is created, let us now create the auto scaling group.

Click on Create an Auto scaling group using this Launch configuration.
Group name - MyApp_ASG
Group size – Start with 2 instances
Network – MyVPC (or default VPC)
Subnet – Select both public subnets here. (select any two subnets if you are using Default Subnet)
Configure scaling policies - Use scaling policies to adjust the capacity of this group

Scale between 2 and 5 instances.
Target value – 60
Instances need – 10
Next Configure Notification
Add Notification – Create Topic
Send a notification to – MyASG_Topic
With these recipients - <your email ID>
Next Configure Tags – Key: Name, Value: MyWebServer
Review – Create Auto Scaling group

Click on Close, you would be directed to the Auto Scaling Groups Dashboard. Explore the Activity History and other tabs.

You have just launched our highly available application in an ASG. You can open the public IP addresses of both the instances in separate browser and see what happens. You should be seeing the sample webpage with AWS logo and instance IDs.

Also check if you got an email from SNS topic, you need to confirm the subscription.

Let us create a Load balancer that will divert the traffic to both these instances in weighted round robin method.

Go to the Load Balancing section of EC2 dashboard and click on Target Group
Create Target Group
Target group name – MyTG
VPC – (Select the VPC you selected for ASG)
Leave rest defaults and click Create.

Click on Load Balancers – Create Load Balancers
From next screen, create an Application Load Balancer
Name – MyALB
Scroll down to the Availability Zones Section
Select the VPC in which you have launched the ASG
Select Public Subnets from two AZs. This is a critical step, reconfirm before going forward.

Next - Configure Security Settings – Ignore the warning, it is telling to have SSL certification.

Next - Configure Security Groups. Create a new security group with http open from anywhere.

Next Configure Routing –
Target group – Existing Target Group
Name – MyTG
Leave rest defaults - Register Targets – Review – Create

Click on close and it will take you to the load balancer dashboard, you should see the DNS A record of your load balances in Description Tab. ALB takes a little time to come up. Refresh till you see the state as active.

Let us register our instances in ASG with the MyTG target group. Select your ASG and go to action dropdown and click on edit. In the lower section you will find a field for target group. Click on the empty field and assign MyTG. Save it (save button is towards the top right of lower section)

Open the DNS address of your ALB in a browser and notice what does it show. It is now diverting the traffic to both your instances. You can see the behavior of load balancer while you refresh the page and notice the instance ID.

Take two snapshots of your browser showing both instances' page and upload them in git. You may upload these while submitting this lab completion on TopGear.

Clean up steps –
Delete the resources in the below order
Application Load Balancer – Auto Scaling Group (takes little time to delete) – Target Group – Launch Configuration – Security Groups

Lab Complete.