Introduction to AWS Elastic Load Balancing

**Lab Details:**

1. This lab walks you through to AWS Elastic Load Balancing. Elastic Load Balancing automatically distributes incoming application traffic across multiple Amazon EC2 instances in the cloud. In this lab, we will demonstrate elastic load balancing with 2 instances.
2. Duration: 00:30:00 Hrs
3. AWS Region: US East (N. Virginia)

**Tasks:**

1. Login to AWS Management Console.
2. Create 2 instances with Apache httpd and sample HTML page, register them with ELB.
3. Create an app ELB with external (public) IP
4. Test that you can see the page by going to the ELB’s public DNS Stop one of the instances and see if you can still see the webpage.

**Steps:**

1. Launch your lab environment by clicking on **Start Lab** button.
2. Once your lab environment is created successfully your **Console Login**button will be active, Now click on **Console Login** button, this will open your **AWS Console** Account for this lab in a new tab.
3. Navigate to EC2 by clicking on the “services” menu in the top,then click on “EC2” (in the “Compute” section).
4. Click on launch instance.
5. For the left menu select the checkbox **Free tier only**
6. Choose an Amazon Machine Image (AMI)- **Amazon Linux 2 AMI (HVM)**
7. Choose an Instance Type - Leave it to default selected **t2.micro**
8. Configure Instance Details
   1. **Number of instances** - Enter 2
   2. **Auto-assign Public IP**- Select Enable
   3. **User data** - Enter the following script, which creates an HTML page served by Apache httpd web server.
   4. #!/bin/bash -ex
   5. sudo yum update -y # update packager
   6. sudo yum -y install httpd # install apache httpd
   7. sudo service httpd start # start apache httpd
   8. sudo usermod -a -G apache ec2-user
   9. sudo chown -R ec2-user:apache /var/www
   10. sudo chmod 2775 /var/www
   11. find /var/www -type d -exec sudo chmod 2775 {} \;
   12. find /var/www -type f -exec sudo chmod 0664 {} \;

echo "<html> <h1>Welcome to Whizlabs</h1> </html>" > /var/www/html/index.html

* 1. Leave rest of the field as default and click on next:Add Storage

1. Add Storage- No need to change anything in this step, just go to next step Add Tags
2. Add Tags- For identification of your instances you can add a tag with key pair combination,and go to next step Configure Security Group.
3. Configure Security Group-
   1. To add **SSH**,   
      Choose Type: SSH   
      Source: Custom(Allow specific IP address) or Any where(From ALL IP addresses accessible).
   2. For **HTTP**, Click on “Add Rrule”,  
      Choose Type: HTTP   
      Source: Custom(Allow specific IP address) or Any where(From ALL IP addresses accessible).
   3. For **HTTPS**, Click on “Add Rrule”,  
      Choose Type: HTTPS   
      Source: Custom(Allow specific IP address) or Any where(From ALL IP addresses accessible).
   4. After that click on Review and Launch
4. Review and Launch- Review all your select settings and click on launch.
5. Key Pair- This step is most important, Create new key Pair and click on Download Key Pair after that click on Launch Instances.
6. Launch Status- Your instances are now launching, Now go to EC2 instance list and wait till status change to running of your instances.
7. **Now in next steps we will creating Load balancer for our instances.**
8. First we need to create Target Group for load balancer, Go To Target Group from EC2 left menu bar.
9. **Create Target Group:**Now click on create target group from left menu.
10. In the form enter Target group name.
11. In Health check settings enter /index.html in path.
12. No need to change anything just click on Create. You can see that you target group is created.
13. Now we need to set target to our two instances in our target group.
14. So, in the target group list select the target group you created and in details window select Targets and click on edit.
15. Here you can see instances list, from the list select your two instances and click on add to registered and then save.
16. After creating target group we need to create and configure our load balancer.
17. **Create Load Balancer** :Navigate to EC2 left menu bar and click on Load Balancers.
18. Now click on Create Load Balancer button.
19. **Select Load Balancer Type**: Click on **Create** button in Application Load Balancer section.
20. Then, the next five screens will require some modification from defaults. If a field is not mentioned, leave it as default or empty.
    1. **Configure Load Balancer:**  
       Name :Type a name for your load balancer. For example, my-alb.  
       Scheme :Select Internet-facing, an Internet-facing load balancer routes requests from clients over the Internet to targets.  
       IP address type :IPv4  
       Listeners : HTTP port 80 (optionally, HTTPS 443 - need a key and certificate)  
       VPC : Select default VPC.  
       Availability zones : Select all three.  
       Tags :Enter tag for your ELB identification.
    2. **Configure Security Settings:**If you created an HTTPS listener in the previous step, configure the required security settings. Otherwise, go to the next page in the wizard.Choose Next: Configure Security Groups.
    3. **Configure Security Groups:**  
       Select a group with at least HTTP 80 open or create a new one.
    4. To create a New Security Group-  
       1. Enter a Security Group name and description.
       2. Now add rules to the group , first Add **SSH**,   
          Choose Type: SSH   
          Source: Custom(Allow specific IP address) or Any where(From ALL IP addresses accessible).
       3. For **HTTP**, Click on “Add Rule”,  
          Choose Type: HTTP   
          Source: Custom(Allow specific IP address) or Any where(From ALL IP addresses accessible).
       4. For **HTTPS**, Click on “Add Rule”,  
          Choose Type: HTTPS   
          Source: Custom(Allow specific IP address) or Any where(From ALL IP addresses accessible).
       5. After that click on Review and Launch
    5. **Configure Routing:**  
       **Target Group:**  
       Here select existing target group and select the target group we created earlier with our two instances.
    6. Click on next: Restister Targets
    7. Click on next: Review
    8. Click on create and you can see the message "Successfully created load balancer". Just click on close.
    9. Now select you ELB from the list.
21. **Test ELB:**Wait for aprox 5 minitues to ELB setup once its done check the details of selected ELB and Copy the ELB’s DNS name from the Description tab in the ELB list view’s bottom drawer. Paste the address in the browser and press enter. You should see: This is your HTML page (or whatever HTML you put on the instances).
22. **Stop one instance and test ELB:**Stop one of the instance, wait then check in the target group. It’ll say that the stopped instance is unhealthy. What’s good about app ELB is that it’ll distribute the load cross-AZs.The webpage should still be visible in the browser on the same ELB’s URL.
23. You have successfully completed the lab.
24. Once you completed the steps click on End Lab from your whizlabs dashboard.