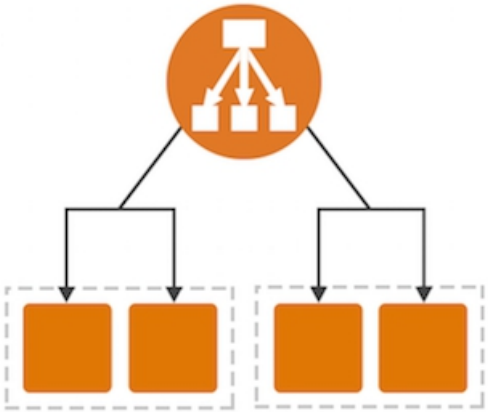
Try it out objective

Use this hands-on to get started with load balancers (LB) and target groups (TG). You'll learn how to the LB with a TG with EC2 instances launched in different Availability Zones (AZ).

The goal

The following are the goals of this hands-on:

1. Understand the process of deploying a resilient application across multiple availability zones (AZ)
2. Create a target group (TG) with EC2 instances
3. Create a load balancer (LB)
4. Associate a TG with the LB
5. Deleting LB, TG and EC2



Please note if a field (short for text field/text area/checkbox/radio/dropdown/list or any other UI element) is not specified in the following steps, it means the default value of the field set by AWS needs to be used. No change is needed for those fields as part of this hands-on.

A. Hands-On: Launch two instances

1. Open the EC2 management console at https://console.aws.amazon.com/ec2/ (you will be required to sign in)

2. Ensure the region is **N Virginia**

3. The following steps needs to be executed twice for launching the two instances

4. Follow the steps in the "Try it out" exercise for launching EC2 instance to launch two instances in two different availability zones. The changes needed for this hands-on is as follows -

   a) On the **Configure instance details** page (step 3 of the 7 step workflow) make the following changes -

      i. In the **Network** dropdown, ensure the default vpc is selected

      ii. Change the **Subnet** to **us-east-1a** and **us-east-1b** in the dropdown for the two instances

      iii. In the **user data** field (bottom on the page) paste the following script (installs the http server and creates a home page) -

   Important note - please copy the complete script properly. A typical mistake is to not select the first and the last few characters.

```
#!/bin/bash
yum update -y
yum install httpd -y
service httpd start
chkconfig httpd on
IP_ADDR=$(curl http://169.254.169.254/latest/meta-data/public-ipv4)
echo "Manual instance with IP $IP_ADDR" > /var/www/html/index.html
echo "ok" > /var/www/html/health.html
```

   b) On the **Add Tags** page, make the following changes -

      i. In the **Value** field paste the value as mentioned below for the first instance and **httpserver2** for the second

```
httpserver1
```

c) The **security group** (opening ports for SSH and HTTP) can be **reused** from the prior hands-on exercise

5. Confirm there are **two EC2** instances running in **two different availability zones** with the **http page working** when accessing the public IP address

B. Hands-on: Create a Target Group (TG)

1. Go to the EC2 management console at https://console.aws.amazon.com/ec2/
2. Ensure the region is **N Virginia**
3. In the left navigation, under Load Balancing, choose **Target Groups**
4. Click on the **Create target group** button (right side top of the screen)
5. Under **Basic configuration "card"**, keep the **Target type** as **instance**
6. In the **Target group name** field paste the following value -

```
web-tg
```

7. In the **Health checks** card paste the following text in the **Health check path** field

```
/health.html
```

8. Expand **Advanced health check settings** and change the **Healthy threshold** field from 5 to **2**
9. Click on the **Next** button on the bottom of the page

10. In the **Available instances** card **select both EC2** instances by **clicking on the checkboxes** to the left of each instance
11. Click on the **Include as pending below** button (middle of the screen just below the EC2 instance listing)

Important note - please ensure the above button is clicked otherwise the TG will be empty

12. Click on **Create target group** button at the bottom right of the page

C. Hands-on: Create a Application Load Balancer (LB)

1. Go to the EC2 management console at https://console.aws.amazon.com/ec2/
2. Ensure the region is **N Virginia**
3. In the left navigation, under Load Balancing, choose **Load Balancers**
4. Click on the **Create Load Balancer** button
5. Click on the **Create** button in the **Application Load Balancer** card
6. In the **Basic Configuration** card paste the following value for the **Load balancer name** -

```
web-lb
```

7. In the **Network mapping** card under the **Mappings** section select **all the availability zones** by clicking on the checkbox to the left of all the AZs
8. In the **Security groups** card select the **tio1-sg** (created at the time of launching the EC2 instances) from the **security groups dropdown**
9. For the **Listeners and routing** card select the target group created earlier in this hands-on **web-tg** from the dropdown **Default action**
10. Click on **Create load balancer** at the bottom of the page
11. **Wait for 5 minutes** (can get done sooner) for the load balancer to get ready
12. Go back to the **Load balancers** listing page and check on the **checkbox to the left** of the load balancer

13. The details will be displayed in the bottom part of the screen, **copy the DNS** of the load balancer

14. Open a **new browser tab** and in the address bar **type http://** and **paste the DNS** that was copied in the previous step

15. Keep **refreshing the browser tab** (typically by pressing F5, can vary depending on the browser) and observe the **page alternating** between the two instances. If the browser **does not alternate** the pages then open an incognito window and try again. This problem is due to **browser caching**.

D. Hands-On: Cleaning up!

1. Go back to the browser tab EC2 management console
2. Visit the load balancer page and delete it
3. Visit the target groups page and delete the TG
4. Terminate both the EC2 instances